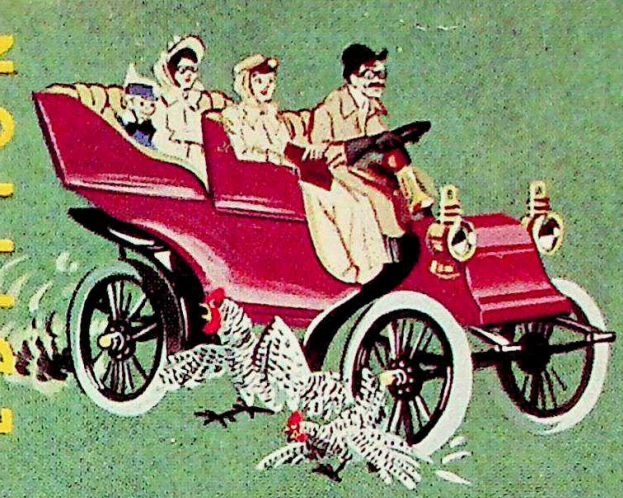
50th ANNUAL AUTOMOTIVE EDITION

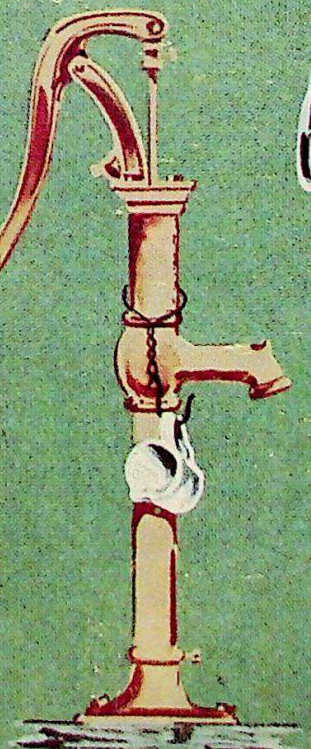
A 2

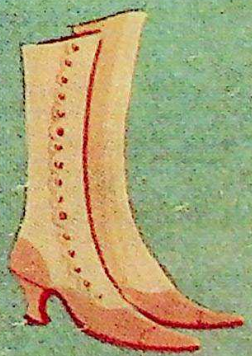


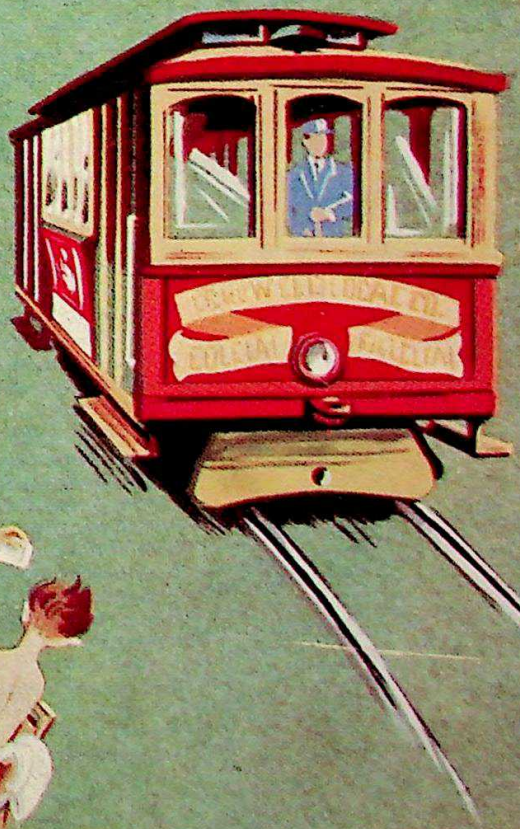
MICHIGAN'S ONLY INDUSTRIAL AND FINANCIAL RE...
ESTABLISHED 1...

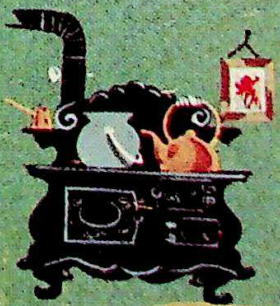
MICHIGAN MANUFACTURER and FINANCIAL RECORD

DETROIT, OCTOBER, 1960
Volume 106 Number 4









Smart sedan . . . practical station wagon. Both have four doors and space to spare!

It's Here!

THE HOT NEW NUMBER IN THE LOW-PRICE FIELD!

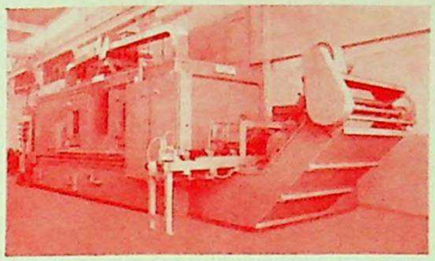
Trim and terrific—the all-new, family-size F-85 is lighter, livelier, easier on gas! Easier to park and handle, too! And this quality-built Oldsmobile can really step out! You command the brand-new, 155-horsepower *exclusive* Rocket V-8—Oldsmobile's aluminum, liquid-cooled engine of *proved* V-8 design that's standard equipment! Six-passenger roominess . . . plus the style and stamina you'd expect in an Olds . . . make the new F-85 a car you'll be proud to drive and smart to own!

F-85

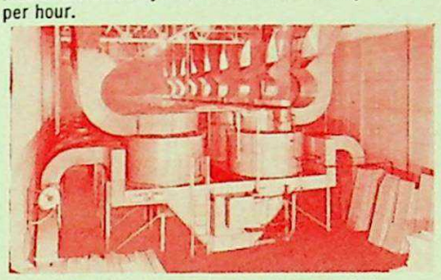
...every inch an OLDSMOBILE!

BEFORE YOU BUY ANY LOW PRICED CAR, SEE AND DRIVE THE NEW F-85
... AT YOUR LOCAL AUTHORIZED OLDSMOBILE QUALITY DEALER'S NOW

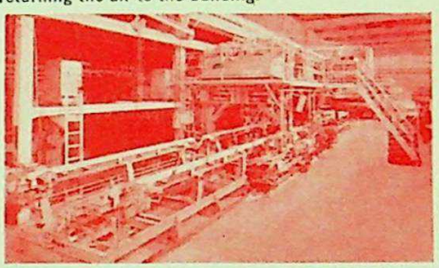
THE SCOPE OF CENTRI-SPRAY . . . PROVIDES THE LATITUDE TO FILL YOUR PRODUCTION AND TESTING REQUIREMENTS



▲INDUSTRIAL WASHING MACHINES . . . This machine washes cylinder heads at rates up to 400 per hour.

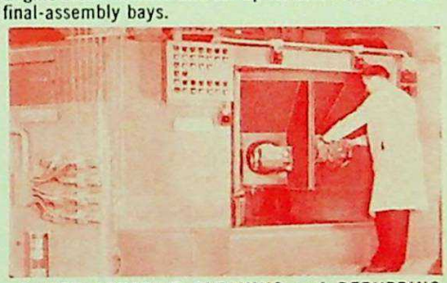


▲DUST COLLECTORS and AIR WASHERS . . . This dust collecting system for a bumper polishing line handles 450,000 cubic feet of air per minute, returning the air to the building.



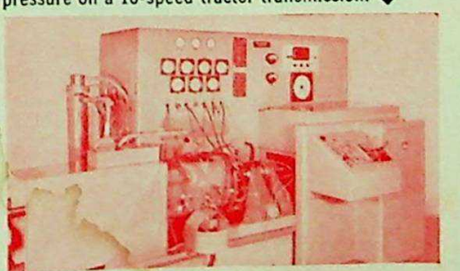
▲SPECIAL MACHINES . . . Automobile frame piercing and machining line has an output of 120 frames per hour.

▲MATERIALS HANDLING EQUIPMENT . . . Engine block transfer line set up for test in one of our final-assembly bays.



▲WET ABRASIVE CLEANING and DEBURRING EQUIPMENT . . . CENTRI-BLAST machine automatically deburrs 250 finished aluminum transmission cases per hour.

TEST STANDS . . . CEN-TEC dynamometer stand for checking speed ratio, torque and hydraulic pressure on a 10-speed tractor transmission. ▼



PLUS . . . paint spray booths, clarifiers, leak testers . . . hydraulic, pneumatic, and electronic test equipment. Write for details to suit your requirements.

Centri-spray CORPORATION

39001 SCHOOLCRAFT RD., LIVONIA, MICH.

Electrical Craftsmanship

Personal pride in a job well done . . . this i
the objective of every craftsman at Hal
Engineering Company. For over 20 years
on jobs large and small, we have recog
nized that satisfied customers are our mos
important achievement. Our craftsmen
work with the most modern plant facilities
and the latest field equipment to bring the
utmost efficiency to every Hall Engi-
neering job.

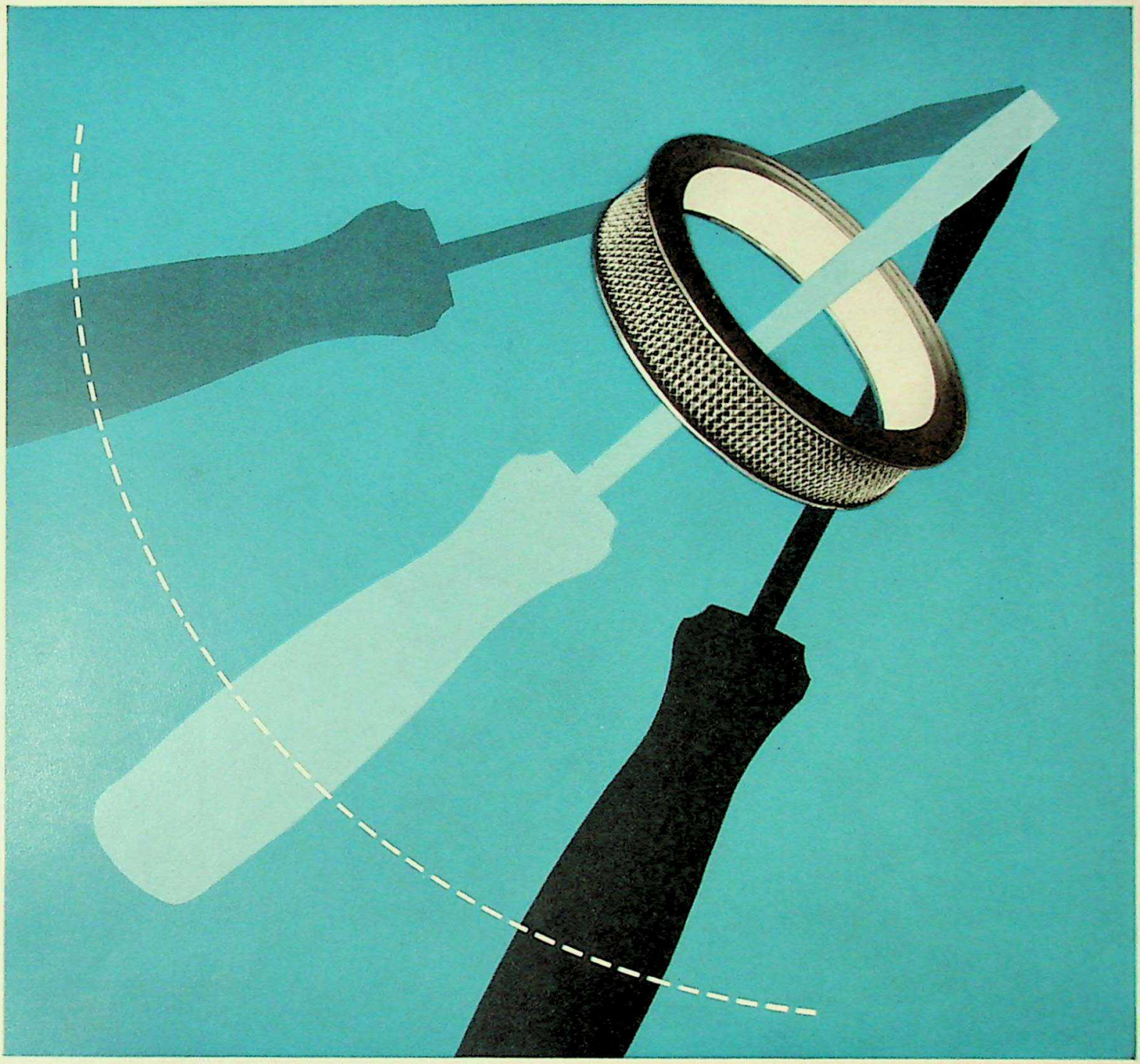
for electrical contracting call:

HALL Engineering Co

TR 1-8200

888 West Baltimore · Detroit 2, Michiga

YOU CAN'T BEAT AC FOR PRODUCT KNOWLEDGE



Here's a new twist for your Air Cleaner problems

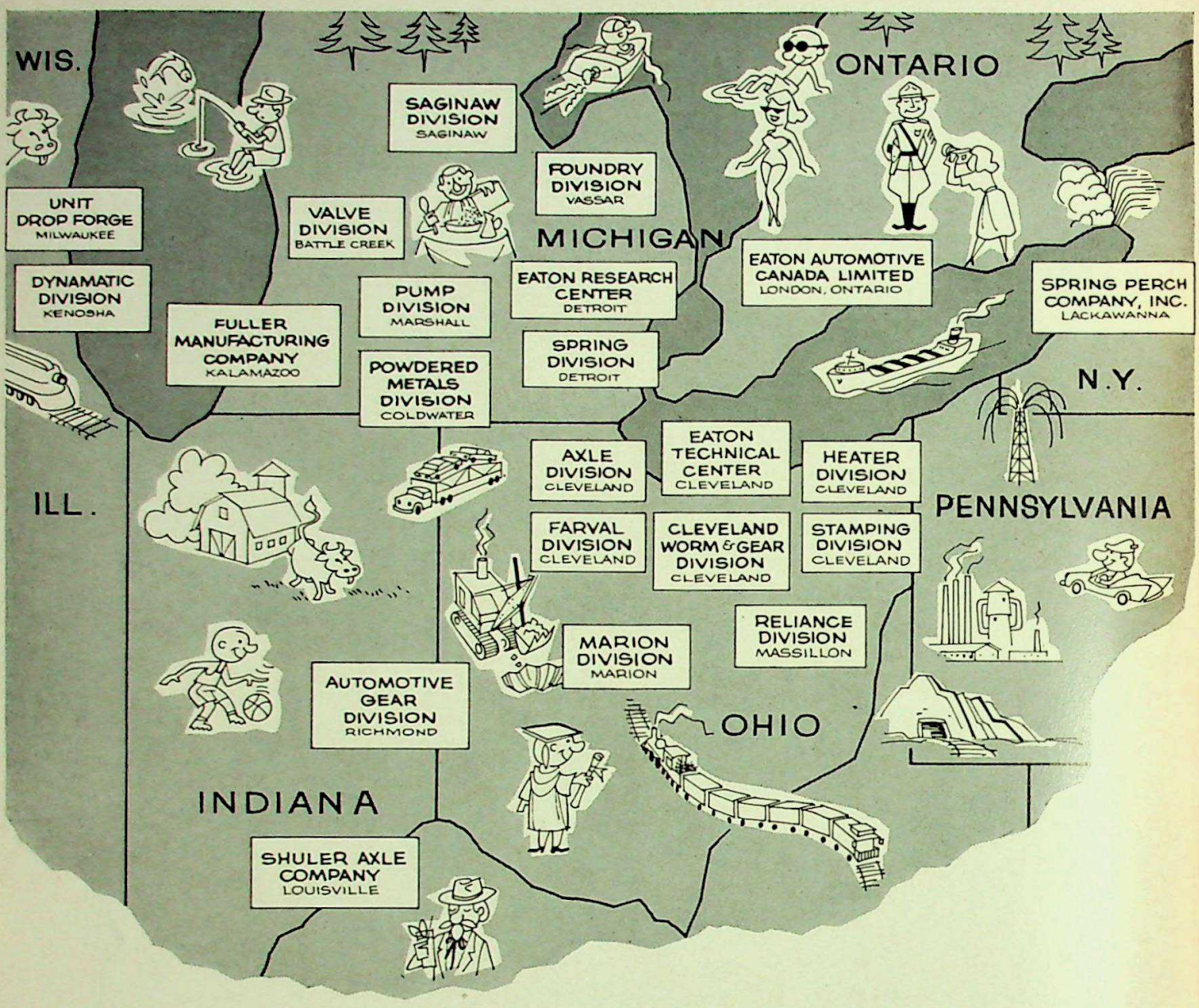
If the products you manufacture use air cleaners, let AC's 35 years of air cleaner know-how assist you. Consider these facts: AC air cleaners are used as original equipment by 39 engine builders . . . AC has produced over 2492 different kinds of air cleaners . . . AC has 23 highly trained engineers working on air cleaners exclusively . . . AC air cleaner engineers spend over 2700 hours annually working directly with customers on experimental development . . . AC air cleaners are continually and periodically tested on a fleet of 540 cars . . . AC has a complete staff of skilled technicians working on prototype air cleaners and customer samples. Call the nearest AC office below. You'll get fast ACtion at AC!

AC

RELIABLE PRODUCTS HELP YOU SELL

AC SPARK PLUG THE ELECTRONICS DIVISION OF GENERAL MOTORS

FLINT—1300 No. Dort Hwy. CEdar 4-5611 | **CHICAGO**—7074 N. Western Ave. ROgers Park 4-9700 | **DETROIT**—General Motors Bldg. TRinity 5-9197 | **PHILADELPHIA**—7 Bala Ave. MOhawk 4-1980, Bala-Cynwyd | **LOS ANGELES**—7666 Telegraph Rd. RAymond 3-5171



Why this Map?

It has a big story to tell—locating 20 of the 22 Eaton Divisions and Subsidiaries where more than 12,000 Eaton people are doing important things to add to the quality, dependability, and long life of the country's best known and most distinguished manufactured products in every field. Not shown are two Eaton Subsidiaries in Brazil.

Our manufacturing operations supply parts and assemblies to leading companies in widely diversified industries. Our two Research and Technical Centers, also shown on this map, work in close co-operation with all of our Divisions; their imaginative engineering continually improves materials, product design, and manufacturing processes. These groups are doing some deep-secret planning, too, which will make our customers' future products even better than today's.

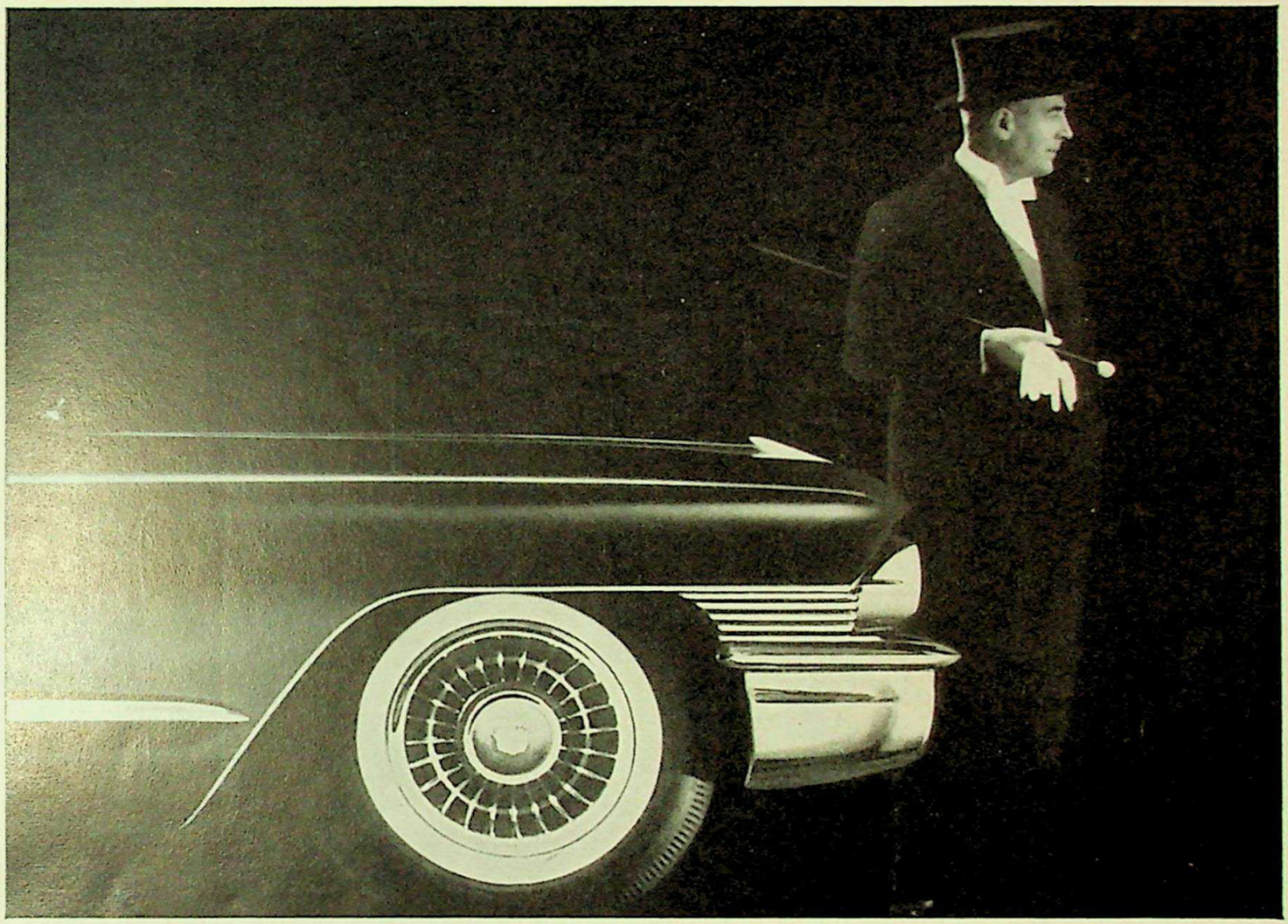
If you would like to know more about Eaton plants and products—send for your copy of our new illustrated booklet.

EATON MANUFACTURING COMPANY

General Offices: Cleveland 10, Ohio

THERE ARE TWENTY-TWO EATON DIVISIONS AND SUBSIDIARIES, PLUS TWO RESEARCH AND DEVELOPMENT CENTERS, CONTRIBUTING CONTINUOUSLY TO INDUSTRIAL PROGRESS

A NEW INSPIRATION FOR THE MOTORING WORLD



Cadillac FOR NINETEEN SIXTY-ONE

Your Cadillac dealer is now displaying the completely new Cadillac for 1961—a motor car so advanced in outward and inward excellence that we believe it will inspire the automotive world for years to come. You are cordially invited to see and drive this totally new concept in fine car design—the Standard of the World for 1961.

VISIT YOUR LOCAL AUTHORIZED CADILLAC DEALER

*CCC on-the-job address: ANYWHERE, U.S.A.

From the seaboard to the Ozarks, from the automobile plants of Michigan to the great steel producing centers, Commercial Contracting Corporation is known for important installations of automated and other manufacturing equipment.

The world's largest producers of automobiles, steel and aluminum rely on CCC. More than a billion dollars' worth of vital machinery has been entrusted to the experienced hands . . . to the practical planning and skilled supervision of the CCC organization. No job is too complex for these experts.

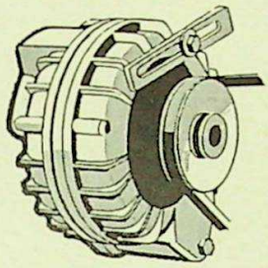
Commercial Contracting Corporation specializes in precision installation of press plants, rolling mills, foundries, scrap collection systems, overhead cranes and other material handling equipment.

CCC's roster of satisfied customers reads like a bluebook of industry. If your company is planning an expansion or alteration program, CCC will do the job quickly, economically, efficiently . . . for CCC "has know-how, will travel."

Write for complete information, without obligation.

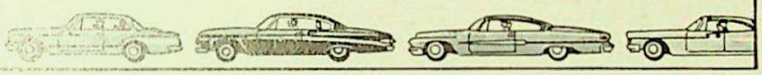
*COMMERCIAL CONTRACTING CORPORATION CCC COMMERCIAL CONTRACTING CORPORATION INDUSTRIAL INSTALLATIONS

Someday other cars will probably offer these features but in 1961 you'll find them all only in the cars from Chrysler Corporation



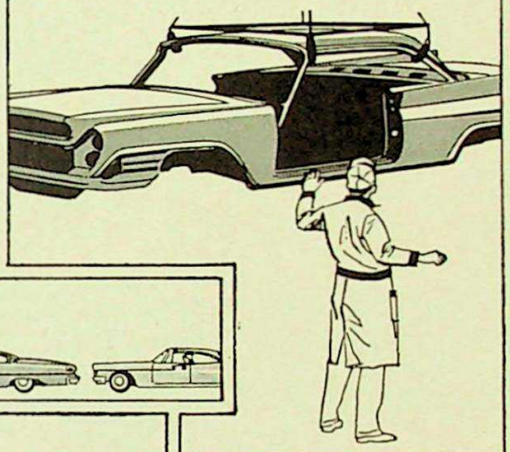
Amazing New Alternator

replaces old-fashioned generator, keeps your battery charging even when your motor's idling, with radio and heater going. This system is similar to the type found in jet aircraft—it's standard at no extra cost in all 1961 Chrysler Corporation cars.



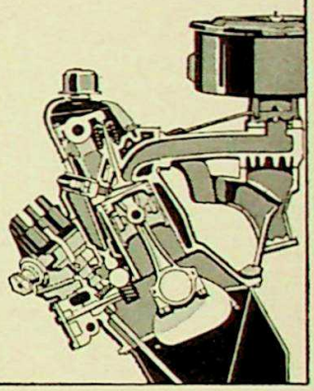
Goodbye Squeaks and Rattles

Unibody Construction makes body and frame a solid, welded unit, eliminates joints that might loosen and get noisy.



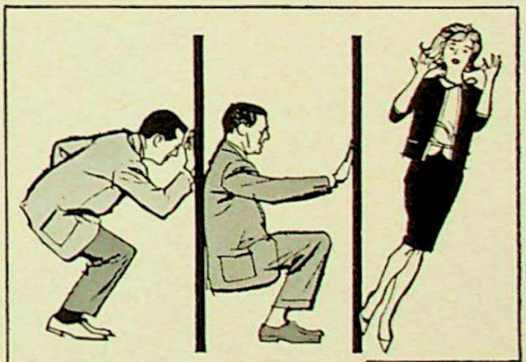
20% more go 15% less gulp

Chrysler Corporation's New Economy Slant Six engine gets 20% more power from 15% less gas than previous sixes. 30° slant allows for a larger, more efficient manifold.



New ease of entry and comfort inside

Big, wide doors make it easy to get in and out. And because these cars are built the Unibody way, a solid unit rather than body on top of a frame, inches of space are added inside.

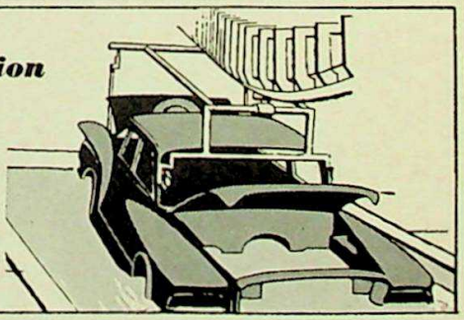


No dip, no squat, no sway

. . . that's the story with exclusive Torsion-Aire Ride. It's the big reason experts call these "the best road cars ever built in America, bar none."

7-soak rust protection

helps your car keep its good looks—and its high resale value. Car bodies are soaked so protection gets to inside metal surfaces where most rust problems start.



You get all this extra value at no extra cost—and these cars are priced competitively model for model with all other makes. Let a drive bring out the difference great engineering makes.

Chrysler Corporation

Serving America's new quest for quality

PLYMOUTH VALIANT • DODGE DART LANCER • DE SOTO CHRYSLER IMPERIAL

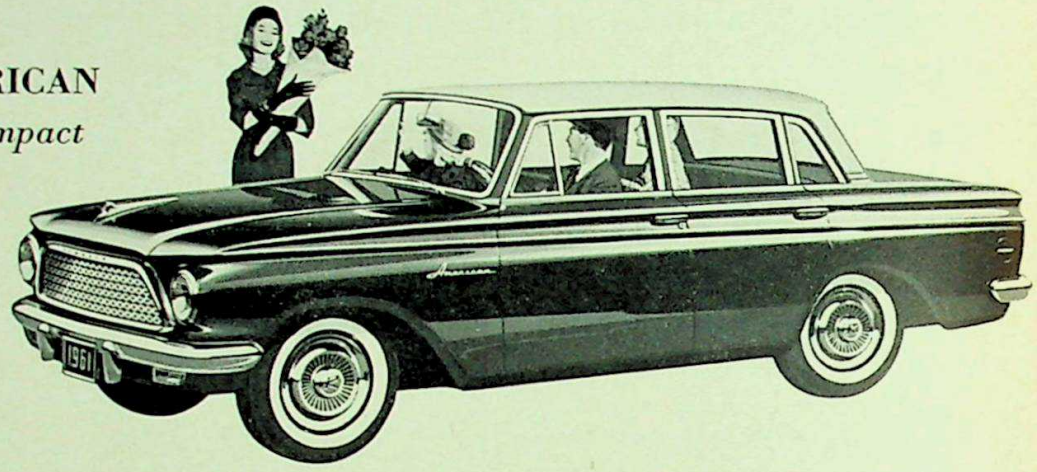
World's Widest Choice Of Compact Cars!

RAMBLER for 1961

1 RAMBLER AMERICAN

The Economy Compact

The recognized Economy King is all-new in style and beauty for 1961. More compact than ever—even easier to park and garage. See the new American Beauty with room for a family of six.



2 RAMBLER CLASSIC 6 and V-8

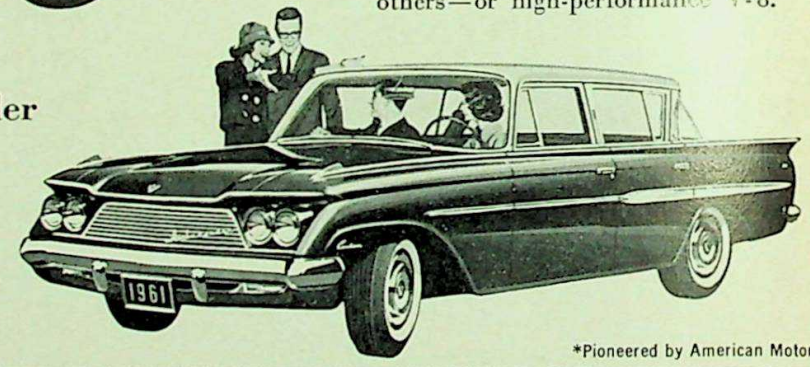
The All-Purpose Compact

The Rambler Classic gives you the Best of Both: big car room and comfort—compact car economy and handling ease. America's first Die-Cast Aluminum Six, standard on Custom models, optional extra on all others—or high-performance V-8.

3 AMBASSADOR V-8 by Rambler

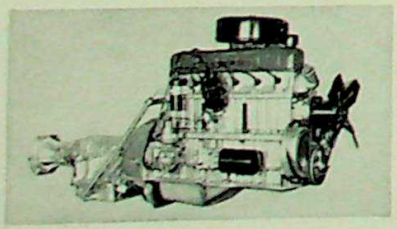
The Luxury Compact

Here is the fine balance of the elegant and the agile. Luxurious room for six 6-footers combined with trim exterior size—stronger, safer Single-Unit* construction combined with your choice of 250 or 270 H.P. V-8 engines for high performance.

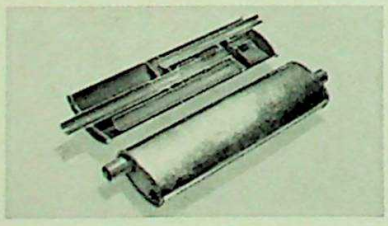


*Pioneered by American Motors

SEE THESE NEW RAMBLER EXCLUSIVES



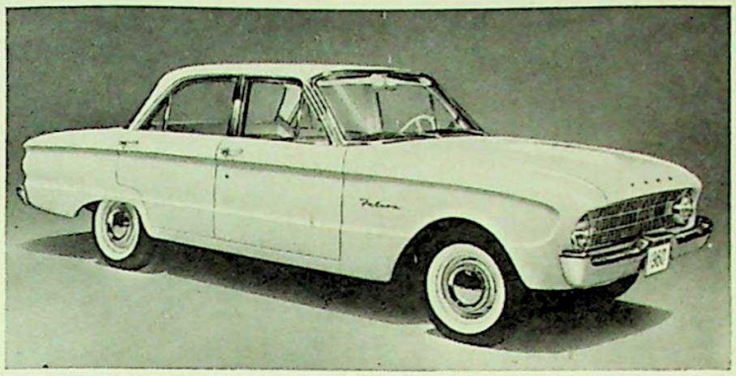
America's first Die-Cast Aluminum Six, the new engine proved by over 2 million test miles. Reduces front-end weight by 80 pounds. Standard on Classic Custom, optional extra on other Classic models.



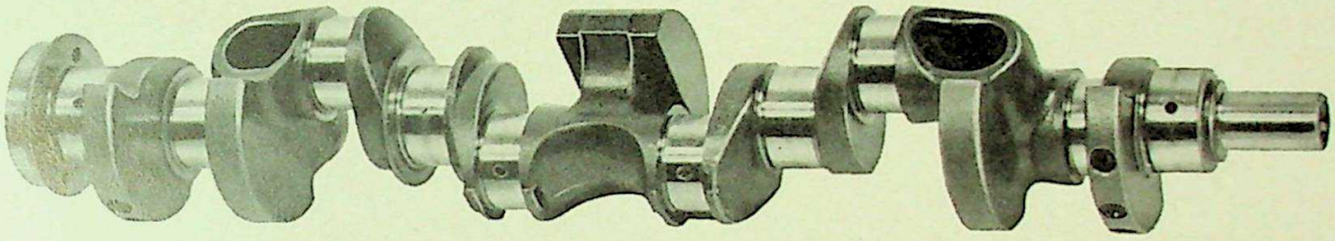
New Ceramic-Armored muffler. Lets you forget muffler and tail-pipe worries for as long as you own your 1961 Rambler. Muffler and tail-pipe are coated with a special ceramic material that protects against corrosion.

New Cushioned Acoustical ceiling of molded fiber-glass deadens road noises by at least 30%. Increases headroom. Shaped for perfect fit. Standard on all 1961 Rambler Classic and Ambassador models.

RAMBLER ... *The New World Standard of Basic Excellence!*



FORD'S FALCON CRANKSHAFT...



SHELL MOLDED EFFICIENTLY WITH

RCI FOUNDREZ RESIN!

Ford is mass-producing Falcon crankshafts by the shell mold process — a method as modern as the compact car itself.

And an RCI phenol-formaldehyde FOUNDREZ resin is used extensively to produce the shell molds for this important Falcon casting.

This combination of process and resin provides an economy born of efficiency. Here's why!

The shell mold process offers specific advantages:

- pattern dimensions can be reproduced more exactly
- castings have closer tolerance, require less machining
- shell molds are portable and use less sand
- in fact, foundry efficiency, flexibility and production rate are increased

And RCI FOUNDREZ resins are ideal for shell mold applications because:

- RCI is a basic producer of both phenol and formaldehyde, which guarantees quality control from raw material to finished product.
- RCI's experience, gained during 35 years of diversified synthetic resin manufacture, assures expert technical service.

The advantages of shell molding may apply on one of your foundry jobs. Write to RCI Foundry Division for detailed information on FOUNDREZ resins.

Creative Chemistry ... Your Partner in Progress

RCI

REICHHOLD FOUNDRY PRODUCTS

FOUNDREZ — *Synthetic Resin Binders*
COROVIT — *Self-Curing Binders*
coRCIment — *Core Oils*
CO-RELEES — *Sand Conditioning Agent*
REICOTE — *Sand Coating Agent*

REICHHOLD CHEMICALS, INC., RCI BUILDING, WHITE PLAINS, N.Y.

COME VISIT MICHIGAN'S LEADING BANK

Detroit is proud to be host to the National Automobile Show and its exciting "Auto Wonderland" in our City's new and outstanding Cobo Hall.

We hope you will also come in to our new Main Office on Woodward at Fort Street and inspect Michigan's Leading Bank.

Here courteous guides will show you the ultimate in bank building design and decor, behind-the-scenes facilities, equipment and operations, plus a unique Money Museum that is one of the largest in the nation. Tours are conducted during banking hours.

A cordial welcome awaits you.

NATIONAL BANK OF DETROIT

Member Federal Deposit Insurance Corporation

MICHIGAN'S ONLY INDUSTRIAL AND FINANCIAL REPORTER
ESTABLISHED 1907

MICHIGAN MANUFACTURER and FINANCIAL RECORD

VOLUME 106 OCTOBER, 1960 NUMBER 4

PUBLISHED MONTHLY BY THE MANUFACTURER PUBLISHING COMPANY
8543 PURITAN AVE., DETROIT 38, MICHIGAN
ENTERED AS SECOND CLASS MAIL MATTER AT THE POST OFFICE AT DETROIT, MICHIGAN

Detroit Welcomes Its First National Automobile Show In Mammoth Cobo Hall

For the first time in history, the National Automobile Show very appropriately this year will be held in Detroit to launch all U.S. car and truck models for 1961 in what officials of the Automobile Manufacturers Association, the sponsoring organization, proclaim as the "largest, costliest and most spectacular show" ever staged in the 60-year history of the national shows.

The 43rd National Automobile Show, as this year's exhibit will be known, will be staged in Detroit's new $54,000,000 Cobo Hall from Oct. 15 through Oct. 23, with 29 makes of American-made cars and 12 makes of commercial vehicles occupying some 300,000 square feet of floor space in the huge, new Detroit convention and display facility. Theme of this year's show will be "Wheels of Freedom."

"Auto Wonderland" Exhibit

In addition to an estimated 300 new passenger cars and trucks, a half-hour musical revue four times daily, and a special world's fair type of exhibit called "Auto Wonderland" (which alone will be larger than most automobile shows of the past), will be among the features of the Detroit show. Admission for the complete show will be 50 cents for adults, 25 cents for children under twelve years. The hall will be open daily from 11 a.m. to 11 p.m.

On Monday evening, Oct. 17, the building's banquet hall (capable of seating 2,800 persons), will be the scene of a black tie dinner for automotive industry leaders and their guests, with President Eisenhower as honored guest and speaker.

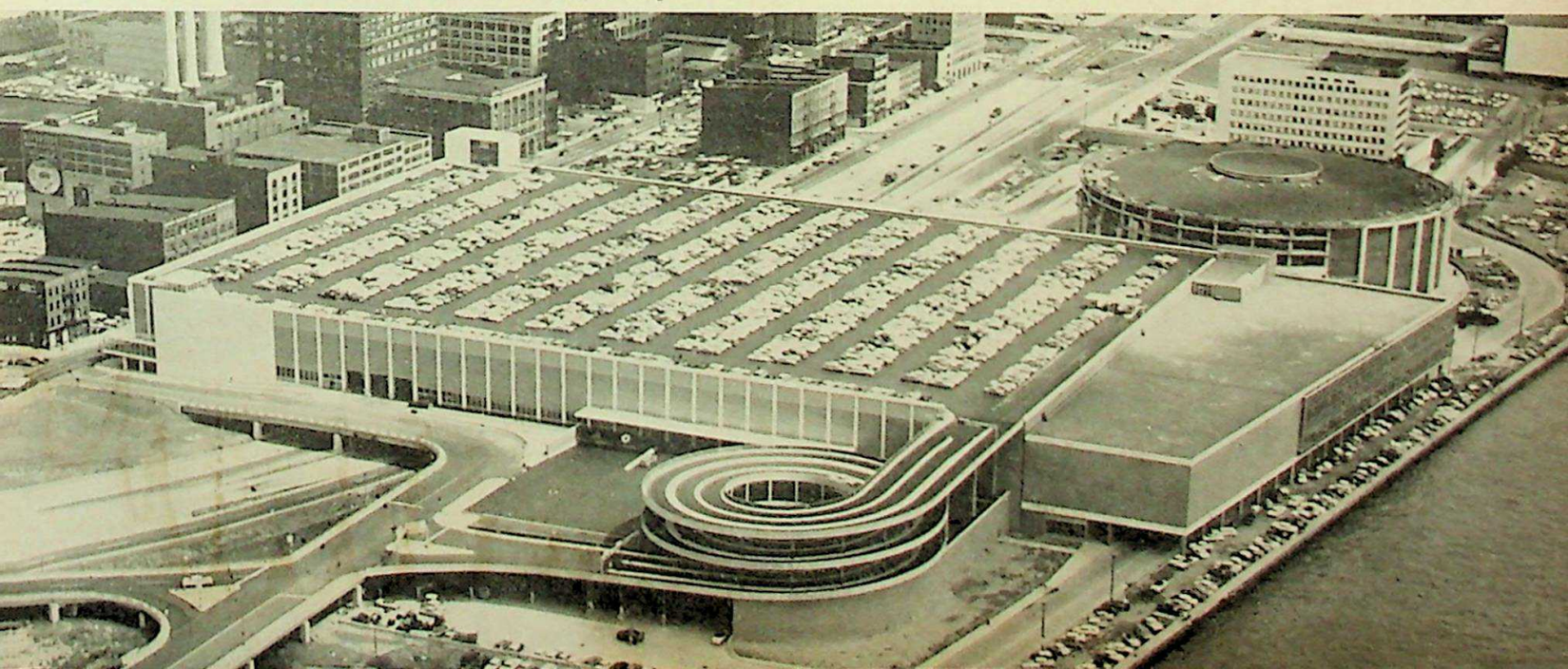
Among the car exhibitors at the show will be Buick Motor Division, displaying its regular-size cars and the new Buick Special; Cadillac Motor Car Division, with its complete line of 1961 cars; Chevrolet Motor Division, with its conventional size cars, the Corvair and new Corvair commercial units, and the sports-type Corvette; Chrysler-Imperial Division, showing both Chrysler and Imperial models; Lincoln-Mercury Division, which will have on display the Comet, Mercury and Lincoln-Continental; Dodge Division, with its regular Dodge models, the Dart and the new Lancer; Plymouth-De Soto-Valiant Division, showing the Plymouth, Plymouth-Valiant, and De Soto offerings for 1961; Ford Division, which plans to display the Fords, Falcon, and Thunderbird; Oldsmobile Division, with the regular-size cars for 1961 and the new F-85 models; Pontiac Motor Division, with its new Tempest car in addition to the conventional size lines; American Motors Corporation, showing the Rambler American, Rambler Classic and Rambler Ambassador lines; and Studebaker-Packard Corporation, which will display the Hawk and Lark models. There will be no foreign-made cars on display.

12 Truck Exhibitors

The 12 exhibitors of commercial vehicles are: Autocar Division of The White Company; Chevrolet; Diamond T Motor Truck Co.; Dodge; Ford; GMC Truck & Coach Division; International Harvester Co.; the PDQ by The White Motor Co.; Reo Division of The White Motor Co.; Studebaker; White; and Willys Motors, Inc., division of Kaiser Motors Corp.

A stage longer than a football field will be used to display the 1961 model cars, with the unique stage and theme center

Overall view of Detroit's new $54 million Cobo Hall, where the 43rd National Automobile Show will be held on Oct. 15-23—the first time this event ever has been held in the Motor City.



measuring 350 by 90 feet. This area is big enough to accommodate a 750-foot continuous conveyor as well as space for the Auto Show's musical revue with its cast of 60 singers, dancers and musicians.

A dominant decorative feature will be a 100-foot long structure rising 30 feet above the floor symbolizing the show's theme of "Wheels of Freedom."

Cars on the conveyor will move over pools of vari-colored water, with tires just skimming the surface. While the stage show is on (four times daily), the slow-moving caravan will be stopped. A show visitor can stand beside the conveyor and watch the complete line of 1961 model cars move by.

111 Exhibitors Participate

The nation's petroleum industry, the malleable iron foundry industry, and 33 additional automotive supplier companies have entered the big "Auto Wonderland" exhibit. This brings to 111 the number of industry associations and company groups exhibiting, according to AMA officials. Hundreds of individual industrial companies are represented by the exhibitor groups.

Auto Wonderland will be a huge show-within-a-show, telling the story of automobile manufacture and of the many industries which contribute to the process. It will occupy 104,000 square feet of floor area. All exhibits will be by industry groups, with institutional rather than commercial content, combined into a show closely integrated by the AMA and the Society of Automotive Engineers.

The Petroleum exhibit, dramatizing the role of one of the nation's biggest industries in the auto age, is sponsored by the American Petroleum Institute. Another major group is the Malleable Castings Council, with six companies cooperating. Many of the new participating companies also are contributing to exhibits in the automotive components section of the show.

"Who's Who" Of Industry

The complete list of Auto Wonderland participants reads like a "Who's Who of the Auto Industry." With their exhibits they are:

Aluminum: Aluminum Company of America; Kaiser Aluminum and Chemical Corp.; and Reynolds Metals Company.

Electrical Power For Industry: The Detroit Edison Company.

Glass: Libbey-Owens-Ford Glass Company; Pittsburgh Plate Glass Company; Chrysler Corporation; and Ford Motor Company.

Iron and Steel Industry: American Iron & Steel Institute.

Malleable Iron Castings: Albion Malleable Iron Company; Auto Specialties Manufacturing Co.; Central Foundry Division, General Motors Corp.; Dayton Malleable Iron & Steel Castings Co.; and Wagner Castings Company.

Natural Gas: Michigan Consolidated Gas Company.

Paints and Protective Finishes: Amchem Products, Inc.; Cook Paint and Varnish Company; Ditzler Color Division, Pittsburgh Plate Glass Company; E. I. du Pont de Nemours & Company, Inc.; Jones-Dabney Company, Division of Devoe & Raynolds Co., Inc.; Parker Rust Proof Company; and Rinshed-Mason Company.

Patents: U.S. Patent Office.

Petroleum: American Petroleum Institute.

Plastics: Society of the Plastics Industry.

Rubber and Tires: Rubber Manufacturers Association.

Zinc and Die Casting Materials: American Zinc, Lead & Smelting Company.

Body Component Makers

Bearings: Cleveland Graphite Bronze Division, Clevite Corp.; Detroit Aluminum & Brass Company; Federal-Mogul-Bower Bearings, Inc.; Hyatt Bearings Division, General Motors Corp.; New Departure Division, General Motors Corp.; SKF Industries, Inc.; Timken Roller Bearing Company; and Torrington Company.

Body Components: The Budd Company; Dana Corp., Parish Pressed Steel Division; Douglas & Lomason Corp.; Eaton Manufacturing Co.; Hancock Manufacturing Company; McInerney Spring & Wire Co.; Midland-Ross Corporation; Schlegel Manufacturing Corporation, Dryden Rubber Division; A. O. Smith Corp.; The Standard Products Co.; Ternstedt Division, General Motors Corp.; and Woodall Industries, Inc.

Brakes: The Bendix Corporation; Bendix-Westinghouse Automotive Air Brake Co.; Delco Moraine Division, General Motors Corp.; Kelsey-Hayes Co.; Midland-Ross Corp.; Orscheln Brake Lever Sales Co.; Rockwell Standard Corporation; and Wagner Electric Corp.

Provide Fuel Systems

Electrical Components and Accessories: AC Spark Plug Division, General Motors Corp.; Bendix Radio Division, The Bendix Corporation; Casco Products Corporation, subsidiary of Standard Kollsman Industries, Inc.; Champion Spark Plug Co.; Delco Appliance Division, General Motors Corp.; Delco-Remy Division, General Motors Corp.; Eaton Manufacturing Co.; The Electric Autolite Co.; Electric Storage Battery Company's Automotive Division; Harrison Radiator Division, General Motors Corp.; King-Seeley Division, King-Seeley Corp.; McCord Corporation; Ranco, Inc.; Stewart-Warner Corporation's Alemite & Instrument Divisions; and Tung-Sol Electric, Inc.

Fuel Systems: AC Spark Plug Division, General Motors Corp.; The Bendix Corporation; Carter Carburetor Division, ACF Industries, Inc.; Holley Carburetor Company; Rochester Products Division, General Motors Corp.; and Tokeheim Corporation.

Lighting: General Electric Company; Guide Lamp Division, General Motors Corp.; Tung-Sol Electric, Inc.; and Westinghouse Electric Corp.

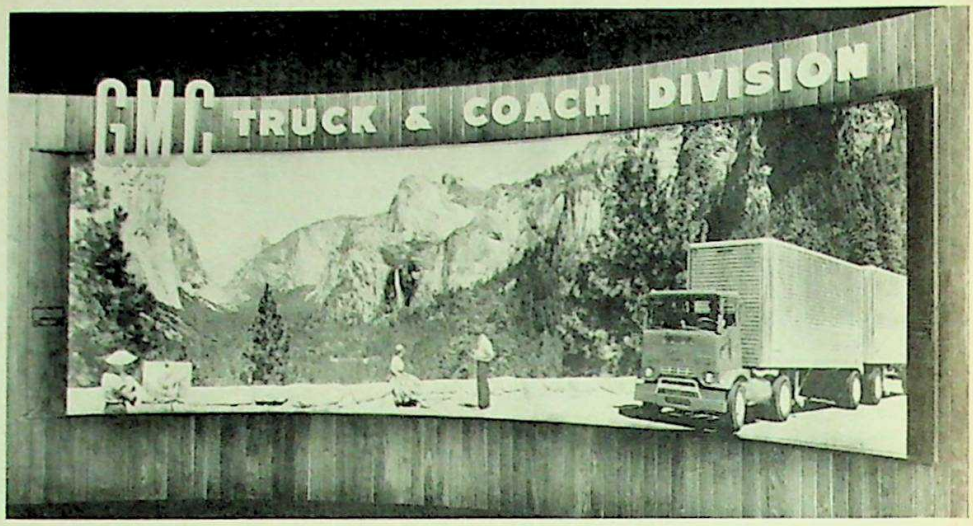
Seating: Allen Industries, Inc.; American Metal Products Co.; F. Burkart Manufacturing Co.; Douglas & Lomason Co.; General Tire & Rubber Company's Textileather, Bolta Products and Industrial Products Divisions; McInerney Spring & Wire Co.; Ternstedt Division, General Motors Corp.; U.S. Rubber Company; Universal Wire Spring Division, Hoover Ball & Bearing Co.; and Van Dresser Specialty Company.

Steering and Suspension: Bendix Products Division, The Bendix Corporation; Eaton Manufacturing Company; Monroe Auto Equipment Company; Rheem Automotive Company, Division of Rheem Manufacturing Company; Saginaw Steering Gear Division, General Motors Corp.; Sheller Manufacturing Corp.; Swedish Crucible Steel Company; and Thompson Products Michigan Division, Thompson-Ramo-Wooldridge, Inc.

Wheel-Hub Suppliers

Transmission and Final Drive: Allison Division, General Motors Corp.; Borg-Warner Corp.; Clark Equipment Co.; Dana Corporation; Eaton Manufacturing Company's Shuller Axle Company and Fuller Manufacturing Company; Rockwell Standard Corp.; and Saginaw Steering Gear Division, General Motors Corp.

Wheels, Hubs and Drums: The Budd Company; Firestone Steel Products Company; Kelsey-Hayes Company; and Motor Wheel Corp.



This giant photo, the world's largest portable color transparency, will be shown by GMC Truck & Coach Division in its exhibit at the National Automobile Show in Detroit. The picture is six feet high and twenty feet long.

"Torpedo" Bodies Made Bow At 1910 Auto Show

Back in 1910, when the first annual Automotive Edition of the Michigan Manufacturer and Financial Record was published, the National Automobile Show was being held for its tenth time. The scene of the show was Madison Square Garden, and the sponsor was the Association of Licensed Automobile Manufacturers.

A new type of body made its appearance at the 1910 show. Previously motorists and their passengers had perched on cars, high and exposed; now they could sit in them, low and sheltered; for this new body resembled a bathtub on wheels. It bore the French designation of "torpedo." At least six makers displayed this novelty, including Marmon, Royal Tourist, Palmer-Singer, Knox, Franklin and Winton. The latter's body was made of wood, while the others were of aluminum.

Of the 323 exhibitors, 43 were vehicle makers. Of the 230 vehicles shown, 186 were gasoline-powered; one was a steamer; and the rest were electrics.

Oldsmobile Officials Shifted

Appointments of S. F. Mehring as director of advertising and Lloyd A. Grobe as manager of group selling activities has been announced by Oldsmobile Division of General Motors Corp.

Mehring, associated with Oldsmobile since 1948, has held a number of administrative sales posts in the company's zones and districts throughout the country.

Grobe joined Oldsmobile in 1954 and was named advertising manager in 1957, transferring to the main plant offices from his post as businessman management manager in the Los Angeles zone.

OFFERS MANAGEMENT SERVICE

Establishment of a new firm of management consultants in the personnel and labor relations fields has been announced. It will be known as Bruce Morse & Associates, with offices in the First National Building, Detroit, Head of the firm is Bruce Morse, for the past eight years head of industrial relations for Dura Corp.

Advances In Automotive Materials

Half-Century Brings New Applications In Glass, Metals, Rubber, Chemicals-Plastics

As the Annual Automotive Edition of the Michigan Manufacturer and Financial Record observes its 50th anniversary with this issue, we are moved to review the progress made in materials used in automobiles over the years—with a look at the future—in terms of benefits to the car buyer.

Four Principal Categories

Both the interests of this publication and its audience make it common sense to highlight these developments in layman's language. Many important details must be briefed and technicalities largely ignored, but it is hoped these articles will give us pride in what has been accomplished and intrigue us with thoughts of things to come.

To simplify treatment, we have divided the over-all subject into four general categories — glass, metals, rubber and chemicals. In many of these segments, and particularly as regards chemicals, there is much over-lapping, but these are general groupings for discussion only.

Change is a way of life for the auto maker—change to do it faster, better, cheaper. Probably never in the history of the industry has there been a group in a dominant industry that changes the design, the material, the styling as fast as these men.

Constantly Scrutinized

These are concepts to bear in mind as we consider the advances in materials—in the techniques of their fabrication and their application—that one may appreciate how these swift changes were beamed to benefits for the car buyer. Often it was demand from the customer that motivated the changes. If the change was economically justified, it was put into effect.

Part of this extreme motivation to change was due to the car itself. It is a subject of constant public scrutiny—unlike the refrigerator or freezer, for example—and for many years has been a status symbol. But it was a symbol that had to perform better and better. It had to wear longer, stay good looking longer, be styled ahead of the proceession—though not too far ahead.

And the competitive situation in the industry gave further impetus to this emphasis on constant change in material and products.

Attract Imaginative Minds

Together, all these factors created a favorable picture to attract imaginative minds, as witness the tremendous sums spent on research for staffs and facilities to abet these aims.

Saving the complex of chemicals for the last, let's take the other groups in alphabetical order, so we begin with . . .

The March Of Glass In Automobiles

Two essential factors for use of any material in such a giant industry—whatever the material's other merits—are (1) that it be available in commercial quantities, and (2) that economical techniques in its fabrication can be developed.

The march of glass—in area and qualities—in the American automobile reflects the American motorists' growing preference for visibility—unlimited. He wants vision for its own sake, and for safety, too.

This desire for more glass area is abetted by the automotive stylist, for some time nudging the engineer to make this material of ancient lineage a structural component of the modern car. Extremists even talk of an almost "all glass" body of the future.

Windshields In 1903

But it was not always so. In the early decades of development of the "horseless carriage" isinglass in curtains provided the view in the typical open job—when it was enclosed at all.

In 1903, the windshield appeared but glass was not to be a material factor until the full development of the closed body a couple of decades later.

In 1909, Oldsmobile built the first closed bodies.

In 1910, the then two-year old Fisher Body Company was rewarded by an order from Cadillac for 150 closed bodies, the first "big order" for closed car bodies ever placed in America.

Closed Car Arrived

The Fishers had kept their eyes on closed car possibilities from the start, realizing that motoring would remain a summer sport until comfort could be provided driver and passengers alike during the winter months.

After two years of pressing these points on car makers had resulted in the Cadillac order, the Fishers saw more business ahead in this line and organized the Fisher Closed Body Company in December, 1910. This initiated the march of the closed car to its ultimate domination of the market.

In 1911, Buick introduced its first closed car—a limousine.

Offers V-Shaped Windshield

In 1912, Packard windshields were made a part of the body.

By 1917, the V-shaped windshield was introduced, and in 1918 a three-piece adjustable windshield appeared. In that year, too, Oakland—which had been organized in 1907—offered its first closed car.

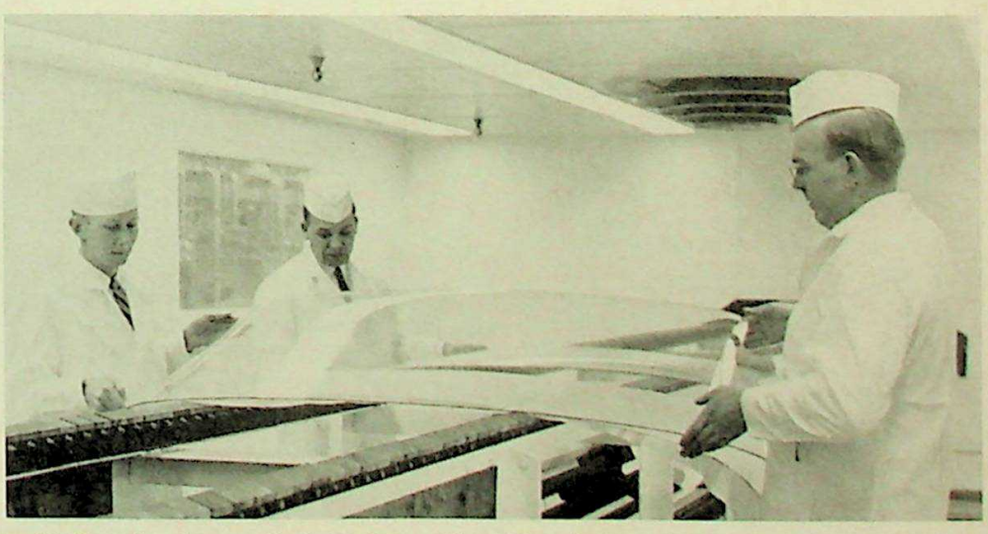
In the classic 20's, the sides of the cars sloped outwards toward the top. This, combined with an upright windshield, produced an amazing kaleidoscope of reflections. It made driving home through a city on a rainy night almost a matter of guesswork. Hence the need for a large assortment of window blinds.

Later, the stylists produced cars with what they called "tumble home," the slope of the glass was changed, and our reflection troubles vanished.

Safety Glass Produced

In the years prior to 1927 the windshields and other lights of practically all motor vehicles in this country were glazed with solid untreated plate or sheet glass. This provided a potential hazard

(Continued on Page 28)



At Chrysler Corporation's McGraw Glass Plant in Detroit, highly skilled technicians place sheet vinyl between windshield glass in an operation conducted under controlled temperature and humidity conditions.

MICHIGAN MANUFACTURER and FINANCIAL RECORD

Founded 1907 by John A. Russell

Published Monthly by
MANUFACTURER PUBLISHING CO.
8543 Puritan Avenue
Detroit 38, Michigan
University 4-9388

Also Publishers of
THE
DIRECTORY OF MICHIGAN MANUFACTURERS

EDWARD E. HAYES, Editor
J. M. PICKELL .....President and Publisher
J. M. PICKELL, Jr. .....Vice-President
M. R. PICKELL .....Vice-President

Subscription rates: Five dollars a year; seven dollars and fifty cents for two years; ten dollars for three years. Fifty cents per copy, expanded and topical editions: one dollar.

Advertising rates on application.

MICHIGAN PRESS ASSOCIATION

October, 1960

EDITOR'S NOTE: In place of the customary editorials on this page, we are presenting in this Golden Anniversary Automotive Edition of the Michigan Manufacturer and Financial Record some excerpts from statements made by leaders in the automotive industry at press previews, dealer shows and other gatherings prior to, or at the time of, the introduction of the 1961 model cars and trucks.

L. L. Colbert, chairman of the board and president of Chrysler Corporation, declares that the introduction of 1961 car models opens the greatest year for the car buyer in the history of the automobile business. He predicts that for the industry 1961 will be "every bit as good as 1960" when car sales will hit at least 6,500,000 passenger cars."

S. E. Knudsen, GM vice-president and general manager of Pontiac Motor Division, said: "There is no boom ahead, but business will be good. In this climate then, we feel that 1961 industry sales will be as good as 1960 and could go as high as 7,000,000 units, including 450,000 to 500,000 imports. We are expecting to sell the same number of regular size Pontiacs as in 1960, and the Tempest will be plus business for our Division." He indicated about 396,488 cars were sold in the 1960 model year.

The automobile market now is divided into size classes rather than the traditional price classes, according to **Walker A. Williams**, Ford Motor vice-president and assistant general manager of the Lincoln-Mercury Division. "The old low and medium-price fields, which were common to the industry for years, now are divided into size segments, such as small foreign cars, domestic compact cars, conventional regular size cars, and luxury cars," he said.

George Romney, president of American Motors Corporation, predicts that before the end of 1961 compact cars will be taking half of total new-car sales, as compared to the current share of about 30 per cent. "By the end of 1963," he states,"the compacts will take two out of every three sales." For his own company, he expects to sell 550,000 to 600,000 Ramblers in the 1961 model year.

Edward D. Rollert, general manager of Buick Motor Division and GM vice-president, pointed out that addition of the smaller size Special series to the Buick line will increase Buick's market potential by more than 200 per cent. "Only 24 per cent of the new car buyers can afford to buy a Buick at the present time. With the addition of the Special to our line, more than 90 per cent of new car buyers can afford a Buick," he explained.

M. C. Patterson, Dodge Division general manager and Chrysler Corporation vice-president, predicts that compacts will take 35 per cent of sales in 1961, as compared with 25 per cent this year.

Wheel Trueing Tool Builds Plymouth Plant

Wheel Trueing Tool Company, a 50-year-old Detroit organization, will build a new plant in Plymouth, it is announced by Harold E. Robison, president. To be completed and occupied by September, 1962, under terms of an agreement by which the City of Plymouth sold the land to the company, the plant will allow consolidation of the operations that now are carried on in four Detroit locations, Robison said.

Employing 250 persons, the building will be on Plymouth Road on a 12-acre site across from a Burroughs Corporation plant. It will contain about 50,000 square feet of floor space.

Harold G. Warner, general manager of Cadillac Motor Car Division and vice-president of General Motors, stated that Cadillac will build and sell 155,000 Cadillacs during the 1960 calendar year, a new all-time record, surpassing the former record year of 1955. He forecasts even higher production and sales in 1961.

Lincoln-Mercury Division of Ford Motor Company expects to increase its sales by 25 per cent next year in a market which is "up for grabs," according to **Ben D. Mills**, Ford Motor vice-president and L-M division general manager. "While a few years ago we confined our efforts to the medium and high price fields, we now have an expanded line of cars filling every segment of the market," he said.

Roy Abernethy, vice-president of automotive distribution and marketing, American Motors Corporation, states that AMC's sales target for the 1961 model year is a total of 550,000 cars, which would be an increase of about 22 per cent over 1960.

FORD PLANS FAIR EXHIBIT

Ford Motor Company has announced that it has reserved a seven-acre exhibit site at the New York World's Fair, to be held in 1964 and 1965.

James O. Wright, Ford Motor Company vice-president and general manager of the Ford Division, says the "general business outlook does not suggest any drastic change in the foreseeable future toward either a boom or a bust. He said that automotive industry sales in 1961 should hold at the same level as in 1960—about 6,500,000 units, including imports.

"From our standpoint," Wright stated, "any year that we increase the market share of our product is a good one; any year we lose penetration to our competitors is a bad one. I think 1961 is going to be a great year for Ford."

Edward N. Cole, general manager of Chevrolet Motor Division and GM vice-president, revealed that Chevrolet sales in 1960 are running 15 per cent ahead of 1959 and also ahead of the record pace set in 1955. He estimated final 1960 sales at 2,085,000 units, which would represent the highest total ever sold by any company in the history of the industry. Looking to 1961, Cole expects industry passenger car sales to reach "as high as seven million," as compared with the 6,800,000 sales forecast for this year.

While retail sales of Studebaker cars in the 1960 model year were slightly higher than in 1959, rising to 108,552 units from 107,603, **Harold E. Churchill**, Studebaker-Packard president, expects the company to boost its rate of increase in 1961. "We are well prepared to meet the challenge of 1961," he said.

Harry E. Chesebrough, general manager, Plymouth-De Soto-Valiant Division, and vice-president of Chrysler Corporation, believes that American automobile buyers have "changed their tastes from the ornamentation and ostentation which characterized the flag of the fifties." He said that today "value, function and quality" are of paramount importance.

Jack F. Wolfram, Oldsmobile Division general manager and a GM vice-president, noting that estimates of new car sales in 1960 run about 6,800,000 car units, said: "In 1961, I look for at least that many—maybe 7,000,000." With the introduction of the smaller F-85 in the low-price field, he said: Oldsmobile is no longer fenced in by price class."

C. E. Briggs, vice-president of Chrysler Corporation and general manager of the Chrysler and Imperial Division, expects his dealers to sell between 110,000 and 120,000 Chrysler cars during the 1961 model year, an increase of 50 to 60 per cent over 1960 sales. He also expects dealers to sell between 23,000 and 25,000 Imperials, an increase of about 40 per cent over 1960 deliveries.

Byron J. Nichols, Chrysler Corporation group vice-president — automotive sales, predicts that American - built compact cars will capture at least 35 per cent of all retail passenger car sales in the 1961 calendar year. He said Chysler Corporation is planning for a year in which total U. S. new-car sales will be at least as good as 1960 sales, which are expected to reach 6,500,000 units, including imports.

GET THE ROOM, RIDE, GO AND PRIDE OF THE COSTLIEST CARS PLUS THE SAVINGS AND EASE OF THE SMALL

It's new size—and all surprise!—this beautiful new Buick Special. When you see it you'll wonder how they packed so much comfort, git and glamour into such a trim-size package. And, in truth, it took some doing even for General Motors and Buick. Here's why:

Beneath its Clean Look of action, for the first time an aluminum V-8 plus an aluminum transmission* (the peppiest, most compact automatic made)! You can breeze into an expressway from standstill to safe speed as spritely as in a full-size car.

And, Buick's all-day ride keeps you as comfortable on the superhighway as at the supermarket. Reason? More total head, hip and leg room than any compact . . . new Hide-Away drive shaft for flatter floors . . . new 4-coil Control Arm suspension.

Now, imagine dozens more equally exciting surprises, plus a price just a whisper above the compacts, and you're beginning to get the picture. But, one drive is worth a thousand pictures, so why delay? Your Buick Dealer is waiting to surprise you now! Buick Motor Division — General Motors Corporation.

*Aluminum Dual-Path Turbine Drive—optional at extra cost.

SPECIAL-SIZE
BUICK SPECIAL
THE BEST OF BOTH WORLDS

★ ★ ★

Built on a 112-inch wheelbase, the Tempest sedan features a four-cylinder, front-mounted engine, a rear transmission and unit body construction, with an overall length of 189.3 inches. Carrying out Pontiac's famous wide track design, this family-sized car has a roomy interior, a flat floor and spacious rear luggage compartment. It is offered in a four-door sedan, shown here, and a four-door station wagon.

★ ★ ★

Tempest Is Outstanding 1961 Offering

Outstanding among the 1961 offerings of the motor car industry is Pontiac's new Tempest series, a four-door sedan and a four-door station wagon, built on a 112-inch wheelbase and featuring a rear transmission (transaxle) joined to a front-mounted, four-cylinder engine by a flexible propeller shaft conceived and developed by Pontiac.

Following Pontiac tradition, the Tempest design features wide track wheels, independent four-wheel suspension and unit body construction. These inherent characteristics, in addition to unmistakable exclusive styling, brand the Tempest as a totally new design concept.

110 Horsepower Engines

Standard power for the Tempest is a 195 cubic-inch, 110-horsepower, four-cylinder regular fuel engine, which gives economical operation and top performance. Inclined at 45 degrees, this new short stroke four is available in five different versions, ranging from the one-barrel, regular fuel engine developing 110 horsepower with synchromesh transmission, to a four-barrel, premium fuel engine rated at 155 horsepower for either synchromesh or automatic transmissions.

Also available in the Tempest is a 125 cubic-inch, regular fuel V-8 engine for use with both synchromesh and automatic transmissions. This engine has a two-barrel carburetor and develops the same horsepower as the top rated four. Still another version is a 215 cubic-inch aluminum water-cooled V-8 for both synchromesh and automatic transmissions, which uses regular grade gasoline.

The inclined four-cylinder engine retains the same components as the regular V-8, including main bearings of three-inch diameter, harmonic balancer, tin-plated pistons, aluminized valves, and hydraulic valve lifters. It has a 4 1/16 inch bore and a 3¾ inch stroke.

Compression ratios are 10.25 to 1 for the premium fuel and 8.6 to 1 for the regular fuel engines.

Ideal Weight Distribution

Design of the Tempest engine affords the best possible use of engine compartment space and provides easy serviceability. The exhaust pipe and manifold are on the right side of the engine, while the intake manifold, carburetor, fuel pump, generator and starting motor are on the left side. The cast iron cylinder block has three rugged intermediate bearing bulkheads and five main bearings for the crankshaft.

Most significant among the innovations in the Tempest is the front engine-rear transmission arrangement which provides ideal weight distribution to independent four-wheel suspension. Power is transmitted from the engine to the transaxle by a newly developed drive shaft that virtually eliminates the floor tunnel.

"Split Torque" Principle

Standard transmission for the Tempest is a manual shift, three-speed conventional synchromesh, while an automatic transmission is offered as an option. The synchromesh transmission is light weight and compact, and shares a common lubrication system with the rear axle. The automatic transmission has its own separate lubrication.

The Tempest makes automobile history with its front engine-rear transmission arrangement and has the first torque converter transmission employing a "split torque" principle. It is a light weight, air cooled, three element torque converter, two speed planetary transmission with an automatic upshift depending upon car speed and throttle position. In high gear, the drive is split with approximately 40 per cent of the drive straight mechanical and only 60 per cent of the torque going through the converter.

Four-Wheel Suspension

Equally unique in concept and design is the ⅝ inch diameter propeller shaft connecting the front-mounted engine to the rear-mounted transmission. It is manufactured of special quality, triple alloy forged steel. Heat treated and shot peened for high fatigue life, the flexible shaft was precisely developed and extensively tested. Housing the propeller shaft is a torque tube of heavy gauge steel that rigidly joins engine and transmission. This curved housing serves to support bearings for the prop shaft, divorces engine torque reaction from engine mounts, permitting use of softer engine mounts.

Contributing to the smooth Tempest ride is the independent four-wheel suspension system that cushions the unitized body by an ideal combination of coil springs and shock absorbers. Fifteen-inch wheels give excellent road clearance, ride and fuel economy.

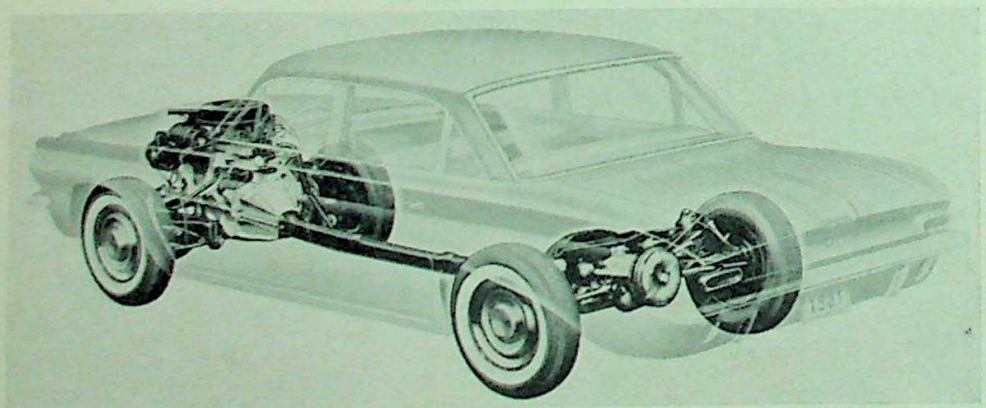
Tread of 57 Inches

Tempest bodies are of integral construction. Both the sedan and station wagon have a 112-inch wheelbase, are 189.3 inches oveall, and 72.2 inches wide. The tread is 57 inches wide.

The station wagon features a quick opening, self-locking, one-piece tail gate that provides easy access. The tail door is counterbalanced by torsion bars. A hidden locker beneath the floor provides convenient storage and a chromed roof top carrier is available as an accessory.

Fifteen exterior colors are available, with a total of 57 possible two-tone combinations.

Among other accessories offered are windshield washers, dual speed wiper blades, air conditioning, power steering, radio, heater, and back-up lamps.



Entirely new in concept, the Tempest features a front engine-rear transmission arrangement and independent suspension at all four wide track wheels. Power is transmitted from the engine to the transaxle through a drive shaft that virtually eliminates the floor tunnel. The shaft itself is ⅝ inch in diameter, of special triple alloy forged steel.

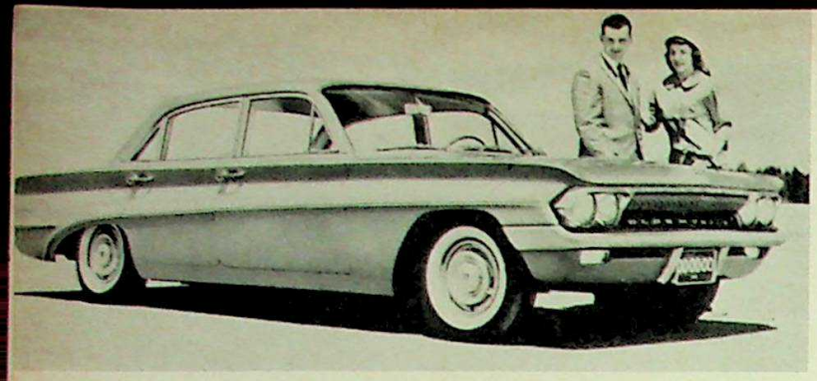
Custom Molded PLASTICS PRODUCTS

United's Staff is available to survey and work with your engineers on any prospective applications that you may be considering.

UNITED Plastic INDUSTRIES

MAIN OFFICE and PLANT: 1300 WATER STREET, VASSAR, MICHIGAN • Phone Taylor 3-2431

specialists in the production of custom molded thermoplastics products



Front view of the 1961 Oldsmobile F-85 Deluxe sedan. It is powered by the new aluminum, water-cooled Rockette V-8 engine, with a displacement of 215 cubic inches and a compression ratio of 8.75 to 1. With maximum brake horsepower of 155 at 4,800 r.p.m., the engine weighs 350 pounds.

Rear view of the 1961 Oldsmobile F-85 Deluxe sedan, which seats six comfortably and offers 12.1 cubic feet of usable luggage space. Built on a 112-inch wheelbase, the F-85 is 188.2 inches long overall. Both the F-85 and F-85 Deluxe models are available as four-door sedans or four-door station wagons.

Oldsmobile Enters Low-Priced Field

Bringing traditional Oldsmobile quality, performance and styling into the low-price field for the first time, the F-85—the new smaller Oldsmobile—was placed on sale at Oldsmobile dealer showrooms on Oct. 6.

112-Inch Wheelbase

"The Oldsmobile F-85," said J. F. Wolfram, Oldsmobile general manager and GM vice-president, "is a six-passenger car combining high performance and economy of operation, ideally proportioned for handling ease, attractive styling and eye appeal. It is offered in two body styles, a four-door sedan and a four-door station wagon, with deluxe versions of each."

The F-85 is 188.2 inches long overall. Built on a 112-inch wheelbase, it is 71.6 inches wide and 52.6 inches high. Not only does it seat six people comfortably, but it also offers 12.1 cubic feet of luggage space.

Wolfram said that the F-85 gives 25 per cent more miles to the gallon than many full-size cars, but does not "compromise on performance." He attributed this economy to the car's curb weight of only 2,695 pounds, some 1,500 less than its full-size brother, the Dynamic 88, and to the efficiency of the new aluminum Rockette V-8 engine.

New Hydra-Matic Transmission

The Rockette engine, now being built at the Oldsmobile plant in Lansing after three years of intensive development work, is a water-cooled 215 cubic-inch power plant with a dual-throat carburetor and a compression ratio of 8.75 to 1, and is designed to operate on regular grade gasoline. Rated at 155-horsepower, the Rockette aluminum engine has one of the highest power-to-weight ratios in the industry, Wolfram pointed out.

Another important part of the F-85's power train is a completely new lightweight Hydra-Matic transmission, featuring Accel-A-Rotor action. Offered as optional equipment at extra cost, the new automatic unit is a smaller and lighter Hydra-Matic designed on the same principles as its larger counterpart.

The Accel-A-Rotor is a unique fluid torque multiplier operating as first gear. It gives the car smooth getaway performance, blending into normal Hydra-Matic operation as it gains momentum.

The F-85's frame-integral body construction gives it light weight but a strong structure for a car of this size. Its smoothness and quietness is due in a large part to extensive use of rubber mountings in assembling its chassis' components to the body. Road shock, noise and harshness are dampened out.

The complete front suspension—a new coil spring, ball joint anti-dive design—is mounted to a separate front cross member, insulated by rubber mountings. At the rear, a twin triangle stabilized coil suspension system assures excellent stability and road handling. Two rubber-mounted links on each side connect the axle and the differential to the body side rail structure. The outer links transmit driving and braking forces, while the inner links eliminate side sway. The coil springs are mounted directly over the axle.

Offers Station Wagons

The F-85 station wagons are six-passenger models with 73.5 cubic feet of cargo space. Cargo loading and unloading is simple and convenient. The one-piece Easi-Load lift gate, hinged to the roof, lifts above head height so that a person can reach directly into the cargo compartment without leaning over an extended tail gate.

The F-85 and F-85 Deluxe are available in a full range of 15 exterior colors, including nine metallic finishes. Two-tone exteriors are offered at extra cost.

Joins Brooks & Perkins, Inc.

Edward H. Perkins, Jr., vice-president and general manager of Brooks & Perkins, Inc., Detroit, has announced that Philip B. Craighead has joined the company as manager of the newly formed Military Structures Division. Craighead is a past president of The Magnesium Association and was founder and president of Magnesium Products of Milwaukee.

P. B. CRAIGHEAD

Craighead's firm has for several years been a leader in the field of large, lightweight portable military structures, many of which were designed by Craighead. These structures include magnesium and aluminum geodesic domes; magnesium and aluminum radio towers, some of which are telescoping towers developed by Craighead; magnesium and aluminum shelters for personnel, for electronic equipment, and for aircraft and quartermaster supplies.

DISTRIBUTES AMPEX PRODUCTS

Ferguson Electronics, Inc., Detroit and Grand Rapids, has been appointed exclusive Michigan distributor for Ampex magnetic tape products, it has been announced by Eugene B. Sydnor, vice-president in charge of sales.

★ ★ ★

For 1961, Oldsmobile offers an F-85 and F-85 Deluxe station wagon in the low-price field. Both models are four-door, six-passenger wagons with 73.5 cubic feet of cargo space. The Deluxe model, with an optional at extra cost roof luggage rack, is shown here.

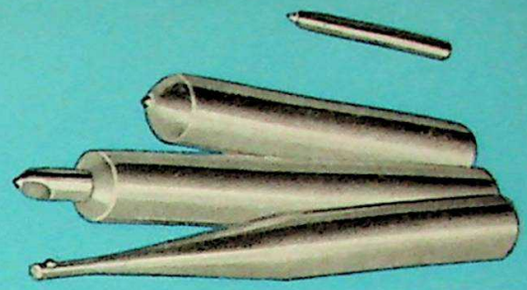
Loading and unloading of the F-85 station wagons is extremely convenient. The Easi-Load rear gate, hinged to the roof, lifts above head height, so that a person may reach directly into the cargo compartment without leaning

★ ★ ★

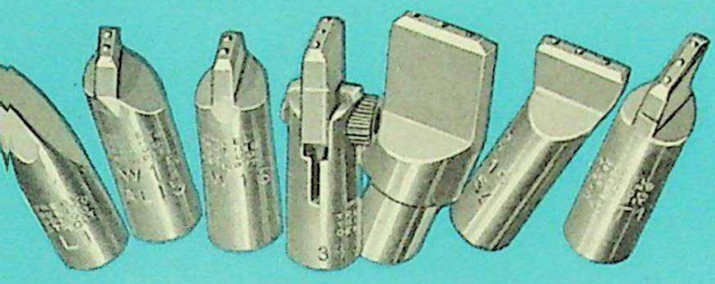
TRU-GRIT DIAMOND DRESSING TOOLS

CLUSTER DIAMOND DRESSING TOOLS

WHEEL TYPE DIAMOND DRESSING TOOLS

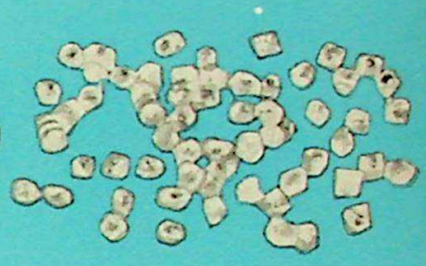


RADIUS FORMING DIAMOND TOOLS



TRU-LINE BLADE TYPE DIAMOND DRESSING TOOLS

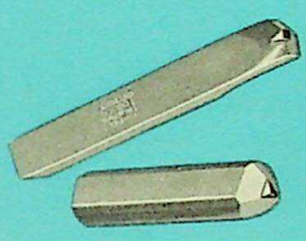
STANDARD DIAMOND DRESSING TOOLS



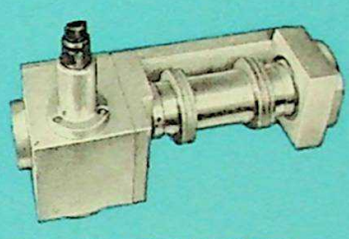
SELECTED AND INDUSTRIAL DIAMONDS

CHISEL TYPE DIAMOND DRESSING TOOLS

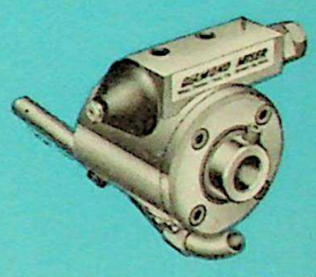
DIAMOND IMPREGNATED DRESSING TOOLS



DIAMOND TURNING AND BORING TOOLS



TRU-GRIT ROTARY DIAMOND DRESSING WHEELS



DIAMOND-MISER DIAMOND TOOL TURNING DEVICES

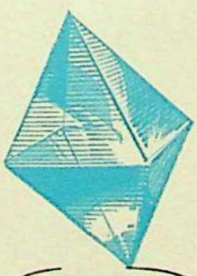
Cutting YOUR Production Costs is Our Only Business at "Wheel Trueing"

Our Diamond Engineers, consulting with your Production Engineers, are interested in only one thing—saving you money on production.

Their analysis of existing procedure may result in finer finishes, higher precision, reduced consumption of grinding wheels and diamond tools, fewer rejects, improved time cycle, simplification of tool needs, reduced tool inventory or a combination of these benefits.

It may even result in a production revolution through use of the remarkable new Tru-Grit® Rotary Diamond Dressing Wheel. Your needs and objectives will decide that. But, the objective is always better products at lower production cost.

Our Diamond Engineers have been cutting costs for industry for 50 years. We would welcome an opportunity to serve *you*. Just phone or write.



WHEEL TRUEING TOOL COMPANY

Main plant and laboratories: 166-3200 W. DAVISON AVE., DETROIT 38, MICHIGAN

Plants in Dallas and Los Angeles • Representatives in major cities throughout the world

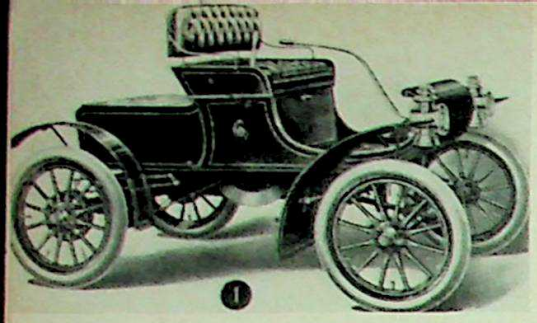
WHEEL TRUEING TOOL COMPANY OF NEW JERSEY

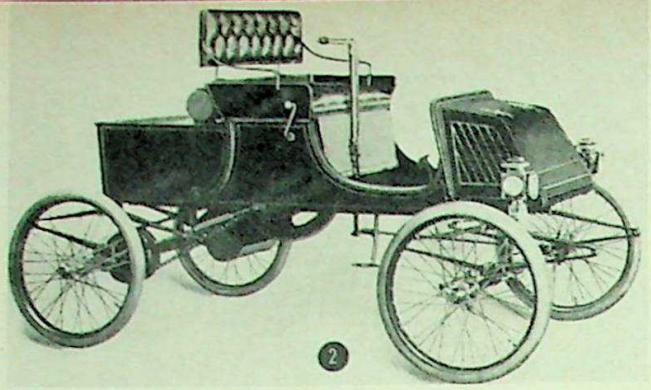
33 West Street, Bloomfield, New Jersey

WHEEL TRUEING TOOL COMPANY OF CANADA, LTD.

575 Langlois Ave., Windsor, Ontario

INDUSTRIAL DIAMONDS—largest stock in the Americas • DIAMOND TOOLS—Engineered to the job and guaranteed to do it • DIAMOND DRILLS for Mining and Oil Field use • DIAMOND DRILLS, SAWS and PORTABLE MACHINES for Masonry Drilling

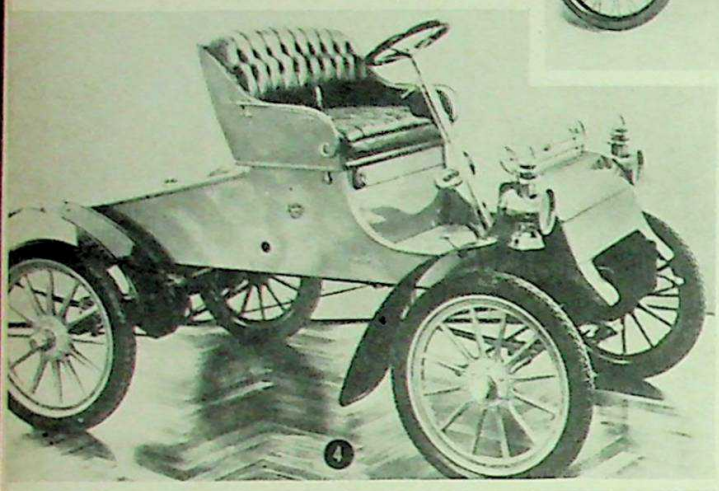


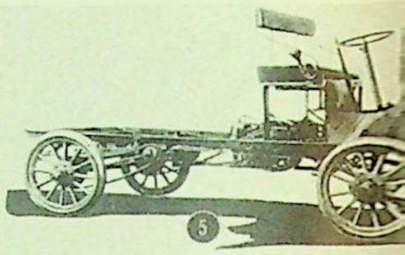


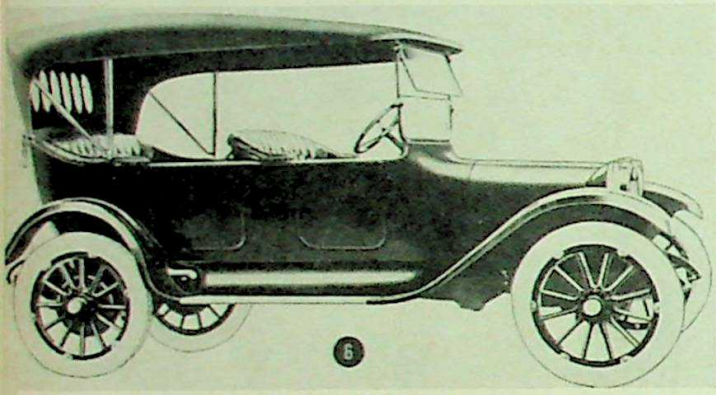
FIRST MODELS BY—

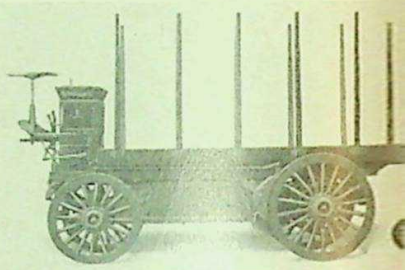
1. Oldsmobile (1900-1904).
2. Rambler (1903).
3. Studebaker Electric (1902).
4. Ford (1903).
5. GMC Truck (1902).
6. Dodge (1914).
7. Studebaker Electric Truck (1902).
8. Chrysler (1924).
9. Plymouth (1928).
10. Mercury (1939).
11. Falcon (1960).
12. Thunderbird (1955).
13. Comet (1960).
14. Valiant (1960).

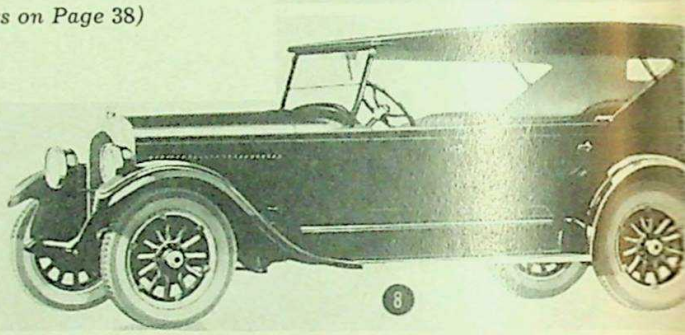
(Others on Page 38)

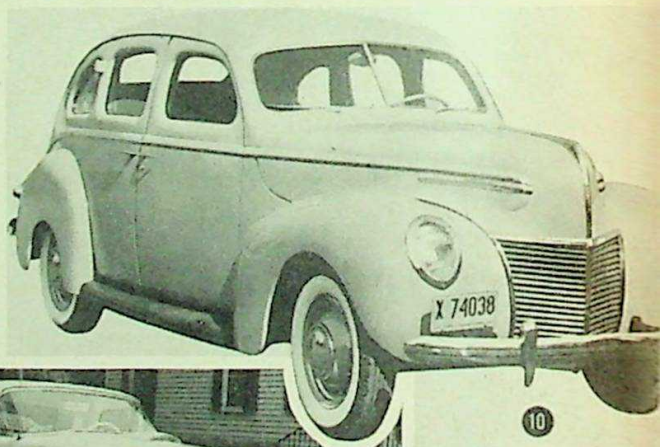


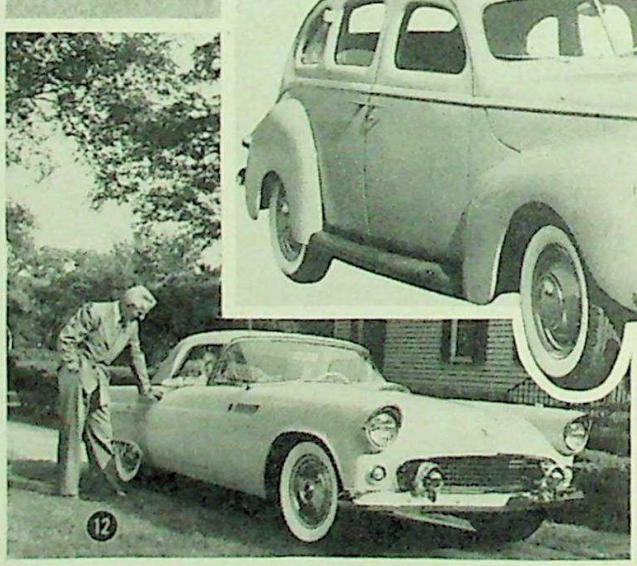


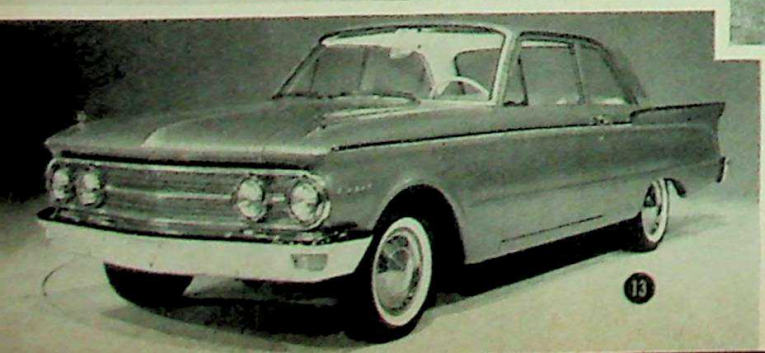




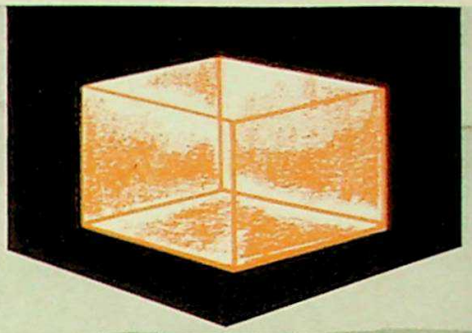


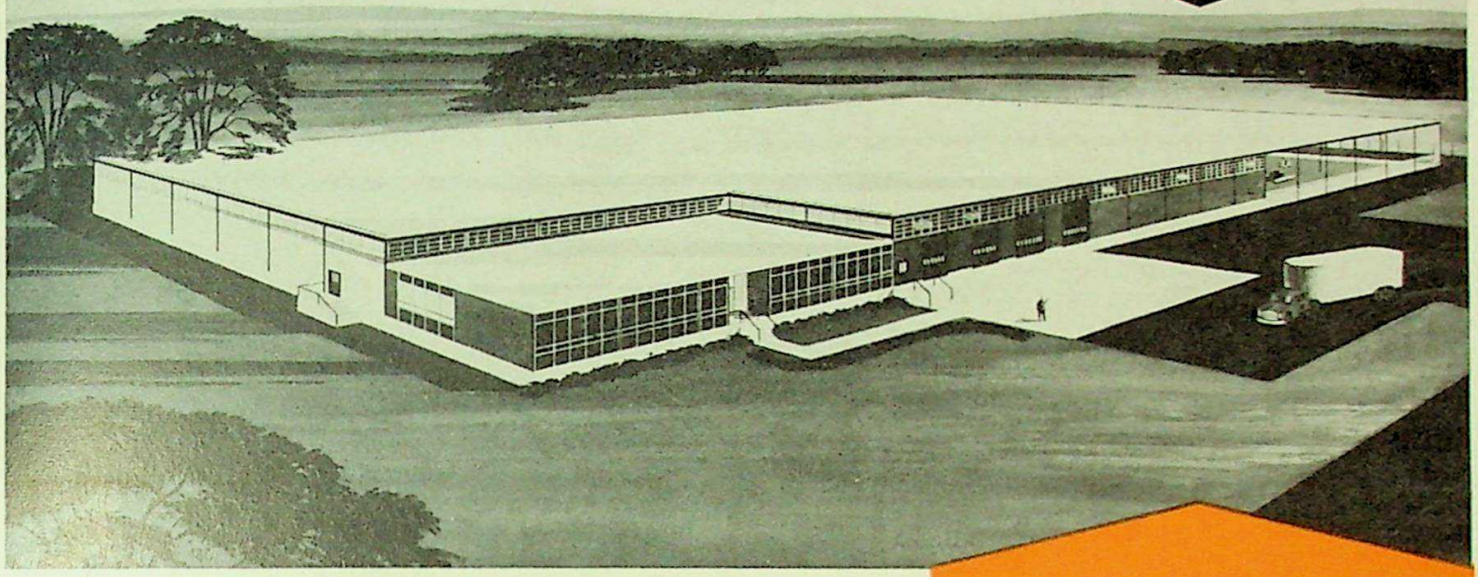






Consider the Cube *before* construction





Every one of the 64,000 square feet serves a useful purpose in this farm Equipment Warehouse and Office (illustrated above) built by Campbell for International Harvester Co.

PLANNING • DESIGN • ENGINEERING
by Campbell Engineering, Inc.
Detroit 10, Mich.

Plants and warehouses are designed, engineered and constructed by Campbell to provide MORE USABLE CUBE per tax dollar. Campbell's feature of EXPANDABILITY, a unique method of structural framing, facilitates additions of cubic footage. This can be done conveniently and economically IN ANY SEASON without interference to the existing operations.

Campbell cubing is designed to reduce initial construction costs as well as later costs of maintenance and operation.

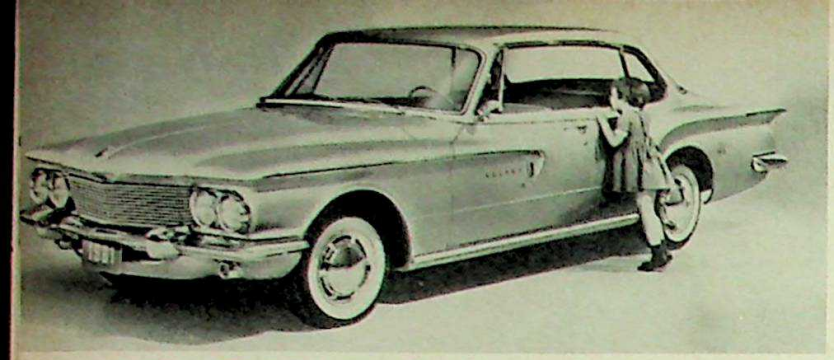
Just write, wire or phone . . . we'll be glad to tell you more.

PROJECT ANALYSIS
CONSTRUCTION
FINANCING
SITE ANALYSIS

A PARTIAL LIST OF CAMPBELL CLIENTS

- American Motors Corp.
- Allegheny Ludlum Steel Corp.
- American Brake Shoe Co.
- Burroughs Corporation
- Chrysler Corporation
- Continental Can Company
- Evans Products Company
- Ford Motor Company
- Fuller Brush Company
- General Motors Corporation
- General Foods Corporation
- Holley Carburetor Company
- International Harvester Co.
- Michigan Bell Telephone Co.
- Morton Salt Company
- Olin-Mathieson Chemical Corp.
- Owens-Corning Fiberglas Corp.
- Remington Rand, Inc.

H. F. CAMPBELL CONSTRUCTION
CO., INC.
GENERAL BUILDING CONTRACTOR
9301 MICHIGAN AVENUE • DETROIT 10, MICHIGAN
PHONE TIFFANY 6-9000
Established 1929



This "770" series model of the 1961 Lancer introduces a new concept of hardtop styling to the compact car field. Unibody construction provides greater strength and roominess than is possible in cars of conventional design.

Shown here is the "770" 4-door sedan, one of seven Lancer models. There is more than 24 cubic feet of useable trunk space in the Lancer, with headroom and legroom actually greater than many models of standard-size cars.

Dodge Offers Lancer In Compact Field

Dodge's new entry in the compact car field, the 1961 Lancer, made its bow in dealer showrooms on Sept. 29, with M. C. Patterson, Dodge general manager, pointing out that it "competes in size and economy with the compacts introduced last year but rivals standard-size cars in performance, comfort, convenience and handling."

"The Lancer is a small car with a big car ride," Patterson said. The new compact is nearly two feet shorter and 700 to 800 pounds lighter than conventional cars in the low-price field. It has a wheelbase of 106½ inches, as contrasted with the 118-inch wheelbase Dart which Dodge introduced last fall.

Wide Use Of Aluminum

The Lancer features wide use of aluminum to reduce weight. It also offers two highly economical, six-cylinder, front-mounted engines and a host of mechanical refinements.

Seven models are offered in the two new Lancer series: Taxi model, 2-door sedan, 4-door sedan and 4-door station wagon in the lowest price "170" series; and 2-door hardtop, 4-door sedan and 4-door station wagon in the deluxe "770" series.

Eight basic colors are offered on the various models. The stylish 2-door hardtop—one of the first hardtop models to be introduced in the compact car field—is available both in solid colors and in 14 two-tone color combinations.

Features available on the Lancer include air conditioning, power steering and brakes, pushbutton automatic transmission, heater, radio and luxurious paneling, upholstery and floor carpeting.

Dart Shape Lines

Patterson said the Lancer is styled with "a look of directed motion—with its lines flowing forward in a dart shape." This styling theme gives the car a long hood and a fast-sloping rear deck.

The grille, hood and bumper thrust forward in a "V". The grille is composed of fine, horizontal lines of rolled stainless steel that extend outward to form a background for the dual headlights. The car has wrap-around front and rear bumpers. Circular parking lights are recessed below the front bumper.

The distinctive front fender sculpturing flows into the front door, and the Lancer name (plus a medallion in the 770 series) is in block letters on the door. The doors of the Lancer are large and reach into the roof line, opening wide to assure easy entrance.

The rear of the car features "clean, uncluttered styling", Patterson explained. The deck lid hinged just below the base of the rear window, has a sculptured windsplit in the center, while the Dodge name appears at the lower edge. The circular tail lights resemble those featured on the 1960 Dodge Dart.

Two Engines Offered

Both of the Lancer's 6-cylinder engines deliver top performance on regular grades of gasoline. One has 101-horsepower and a displacement of 170 cubic inches; the other has 145-horsepower and a displacement of 225 cubic inches. Both are advanced design, inclined engines with a compression ratio of 8.2 to 1.

The new car is equipped with an alternator instead of the conventional direct-current generator. The alternator charges the battery even when the engine is idling. Improved breaker points in the distributor and a lightweight moving arm that increases point life contributes to fuel economy.

The light weight of such major components as the transmission, clutch and torque converter also contribute to economy of operation. These parts and others—including the pistons, alternator, water and oil pump housings and distributor—make extensive use of aluminum.

New tires give much improved traction, especially in wet weather, and also provide 15 per cent more mileage. A new design also reduces curb scuffing, prolonging the life of the tire.

Has Unibody Construction

Unibody construction, which integrates the body and frame; engineering advances in minimizing vibration; the exclusive seven-step rustproofing process; the high quality of the paint enamel—all contribute to a better ride and a better-looking car.

Patterson said Lancer engineers made every effort to maintain the "feel" and comfort of a standard-size car in designing the smaller car. This was achieved by: (1) Locating the engine well forward and using compact transmissions; (2) designing thinner doors, made possible by rugged upper frames; (3) designing the instrument panel so that it does not reduce front seat roominess and knee clearance; (4) using single-unit, unibody construction to provide bigger vertical dimensions and wide, deep foot wells; and (5) styling the car with a long, wide, flat roof to permit uniform headroom for all passengers.

While the car's suspension parts are smaller and lighter than those used in standard-size automobiles, they are just as effective. Torsion-Aire suspension provides an unusually smooth, flat ride, virtually eliminating front-end dip, acceleration squat and cornering sway.

All-Nylon Fabric Used

Models in the 770 series have a knitted all-nylon fabric which is used for the first time in the automobile industry. The station wagons have durable all-vinyl interiors.

The 1961 Lancer station wagon has four large doors to permit easy entrance and exit for passengers. The second seat folds easily to provide enlarged cargo space.

INSTALL OXYGEN CONVERTERS

New liquid oxygen converters, which provide a continuous supply of gaseous oxygen for customers, have been installed at Detroit Oxygen and Acetylene Company, Detroit, and at Detroit Gas Products Co., Royal Oak. The units enable the two dealers to fill gaseous oxygen cylinders to high pressure by converting the easily stored low pressure liquid.

PLANS RESEARCH LAB

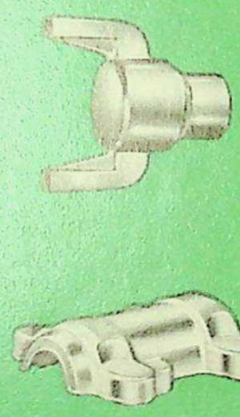
A plan to construct the world's largest medical laboratory devoted to research on hearing has been announced at the University of Michigan Medical Center. The $1,750,000 facility will be started with an initial grant of $200,000 from the Kresge Foundation of Detroit. Present plans call for a five-story wing to be added to the existing Kresge Medical Research Building in the heart of U-M Medical Center in Ann Arbor.

THE MAN FROM MUELLER BRASS CO.

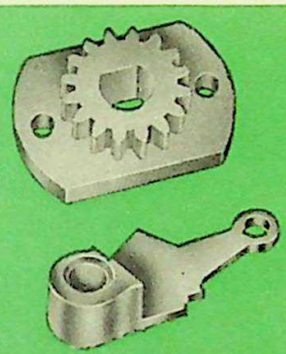
REPRESENTS ONE DEPENDABLE SOURCE FOR PARTS FABRICATED TO YOUR SPECIFICATIONS FROM COPPER, BRASS, ALUMINUM AND PLASTICS

In today's market, the Man From Mueller Brass Co. can help you save both time and money. Mueller Brass Co. offers a variety of production methods and you get an unbiased opinion on the most practical and economical way to make your specific part . . . hence you save time in planning and engineering, and money in production. Consult the Man From Mueller Brass Co. . . . you'll find he's a good man to know . . . and Mueller Brass Co. a dependable source for fabricated parts.

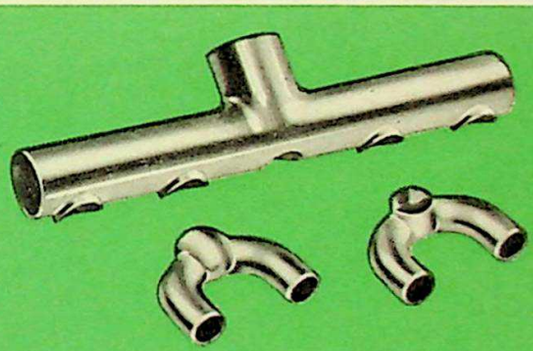
Write today for information on any of the many quality products shown here.



FORGINGS

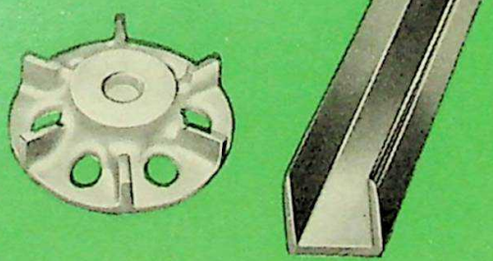


POWDERED METAL PRODUCTS



FORMED COPPER TUBE

SCREW MACHINE PRODUCTS



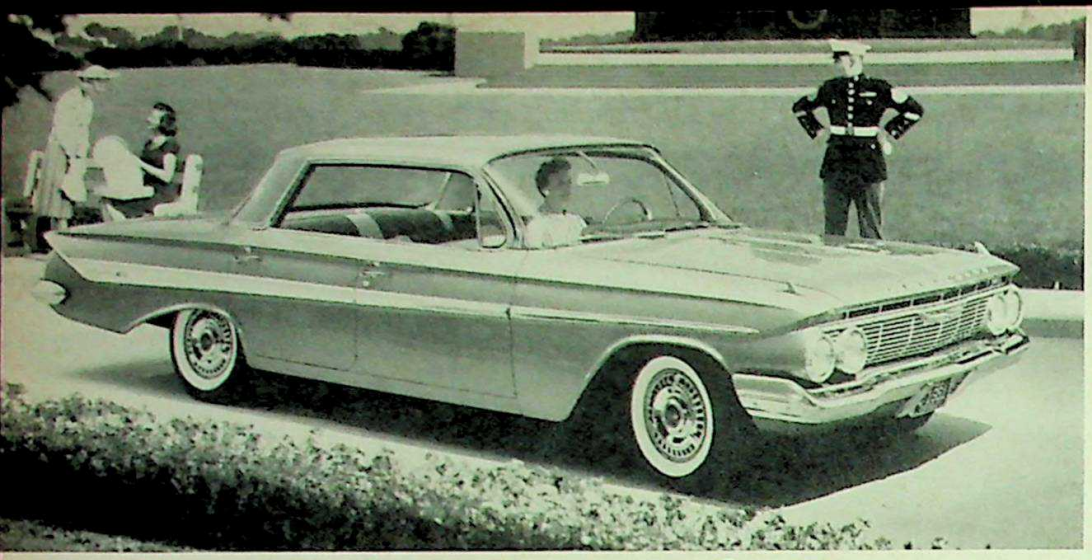
CUSTOM EXTRUDED PLASTIC SHAPES AND INJECTION MOLDINGS

COLD-PREST IMPACT EXTRUSIONS

MUELLER BRASS CO.

MUELLER BRASS CO., PORT HURON 19, MICHIGAN

317



★ ★ ★

Designers have applied smooth, graceful lines to the 1961 Chevrolet Impala, Bel Air and Biscayne passenger car lines. Rooflines, as noted in the Impala sport sedan shown here, are freshly contoured and are separately styled for each series model. The Impala sport sedan is one of 20 body styles in the conventional Chevrolet line.

Overall body design features gently sloping lines. Rear trunk lid now opens even with top of the bumper, affording easier loading and unloading.

★ ★ ★

Chevrolet Extends Passenger Car Range

By broadening its range of passenger cars in 1961, Chevrolet promises to solidify its position as the top seller of automobiles in the industry. Placed on display in dealer showrooms on Oct. 7 were 20 newly styled conventional models, nine Corvairs, and the two-place Corvette.

Complete New Styling

Complete new body styling, which provides easier loading for both passengers and baggage and establishes new heights in motoring comfort and convenience, is featured in the regular line of passenger cars. The entire body, from floor to roof and grille to rear bumper, is all new. High on the list of advantages of the all-new body are:

(1) Easier entrance to passenger compartments.

(2) Large, more accessible luggage space, with the trunk loading level lowered as much as 10.5 inches.

(3) Improved chair height and over-the-hood visibility which will increase the ease of parking and add to driving safety.

(4) Other safety items include improved brakes, overlap electric windshield wipers, and a new placement for the fuel tank which protects it from road hazards such as hard bumps and flying stones.

Cars Are Shorter

Although the conventional Chevrolet cars are shorter, narrower and slightly lower, the interior roominess remains about the same or better than comparable 1960 models. Riding comfort is improved.

Particularly noticeable in the 1961 models is the new styling of the rear deck, with its smooth gentle curves complimenting the styling motif of the car. By changing the rear deck design, added luggage space has been afforded by a new well.

As in 1960, the lineup in the conventional-size passenger cars will be offered in the Impala, Bel Air and Biscayne series. These series have been expanded to include an Impala two-door sedan not previously available.

Chevrolet's 1961 passenger car models present a completely new rear deck with smooth, gentle curves and a sculptured center line running down to a V-shape to enclose the familiar Chevrolet emblem. A new well in the trunk affords more luggage space. Spare tire also has been repositioned to provide more space.

The station wagon series also has been expanded so that there is a choice of either six or nine-passenger accommodations in each of them—the Nomad, Parkwood and Brookwood.

Reversal of the trend to longer, wider bodies also is noted in the fact that the new conventional-size Chevrolet passenger cars are 1.5 inches shorter and 2.4 inches narrower. Overall length is 209.3 inches, and overall width is 78.4 inches.

Corvette In 8th Year

Distinctive design effects are achieved by matching exclusive roof contours of body types. Particularly noteworthy is the elimination of small, triangular windows at the rear of four-door sedans and station wagons. The rear corner pillars of sport sedans have been widened to create a slightly hooded effect.

Revised styling of the Chevrolet Corvette, now entering its eighth year as America's only production sports car, reflects the influence of Chevrolet's recently displayed XP-700 experimental vehicle, especially in its streamlined rear quarters.

Among the improvements on the 1961 Corvette are: A new underbody which makes possible a 19 per cent reduction in transmission tunnel width; new body-to-roof sealing for both hard tops and convertibles which more efficiently insulates interiors; an aluminum case for four-speed transmissions (weight of the unit thus has been reduced 15 pounds); a domed, heavy-duty piston and a new cast-iron head for fuel injection engines, producing a compression ratio of 11 to 1; and increased cooling capacity of the lightweight aluminum cross-flow radiators.

OPENS DETROIT OFFICE

A new sales office has been opened at 2836 East Grand Boulevard, Detroit, by the Milwaukee Crane Division of Novo Industrial Corp., with John DePotter as manager.

MOVES SALES OFFICES

Detroit Steel Corporation has moved its Detroit district sales office from 1025 Oakwood south to 13900 Joy road. D. H. Mathews is manager of sales.

★ ★ ★

Chevrolet's Corvette for 1961 still maintains a strong family resemblance even with the new lattice-type grille in the front and the ultra-continental treatment to the rear half of the car. Rear fenders are more pronounced while fiber glass body surfaces have a new sculptured effect above the modified bumpers.

★ ★ ★

SAGINAW PUTS ITS SHOULDER TO THE WHEELS OF AMERICA'S FINEST CARS AND TRUCKS!

Call on Saginaw's Extensive Facilities and Automotive Experience to Help Move Your Product Easier, More Efficiently

Saginaw plays a big role in keeping today's cars and trucks rolling smoothly. Whether it's helping to transmit power from engine to wheels with Saginaw's transmission parts, propeller shafts and universal joints, or giving the driver a hand in handling that power with Saginaw's Power Steering, Saginaw helps these vehicles move with greater ease, greater efficiency. Call on Saginaw with over 50 years' experience in supplying the automotive industry with top-quality components that have been thoroughly researched, tested and proved reliable in millions of motoring miles. Saginaw Steering Gear Division, General Motors Corp., Saginaw, Michigan.

Saginaw

SAGINAW STEERING GEAR DIVISION • GENERAL MOTORS CORP. • SAGINAW, MICHIGAN

This new Corvair Lakewood station wagon, with its air-cooled engine in the rear, folding seat and luggage compartment, is readily adaptable to almost any job—commercial or pleasure.

A prominent addition to the Corvair line in 1961 is this 95-inch wheelbase Greenbrier sports wagon, with rear-installed engine and independent suspension. It is one of five new models added by Corvair in 1961.

Corvair Offers Full Line For 1961

Chevrolet's rear-powered Corvair blossoms out as a full line of automobiles for 1961, with station and sports wagons joining the Corvair family when the new models made their debut in dealer showrooms on Oct. 7.

Here is the Corvair lineup for 1961: Passenger cars—club coupes, four-door sedans and a new Lakewood station wagon in the "500" and "700" series, plus the deluxe Monza sport coupe and the new Greenbrier sports wagon. Commercial: Corvan, Rampside and Loadside trucks (described elsewhere in this issue).

New Fuel Economy

In appearance, the 1961 Corvair retains its symmetrical form but new styling touches and beautified interiors distinguish it from previous models. The low-slung profile remains unchanged.

Also untouched are engineering fundamentals such as the flat, air-cooled engine and transmission-axle combination, which are continued at the rear.

New fuel economy results from the lower-numerical axle ratio and the new non-gas burning heater. A hot air heater now is offered as optional equipment.

Increased luggage capacity is made possible by moving the spare tire from under the hood to the engine compartment. A 14-gallon fuel tank is substituted for the former 11-gallon tank.

Car Hood Eliminated

The Greenbrier is a new forward control vehicle designed on a 95-inch wheelbase. The normal car hood has been eliminated. A full width driver's seat mounts over the front wheels. The body will accommodate two additional seats, positioned conventionally or facing each other.

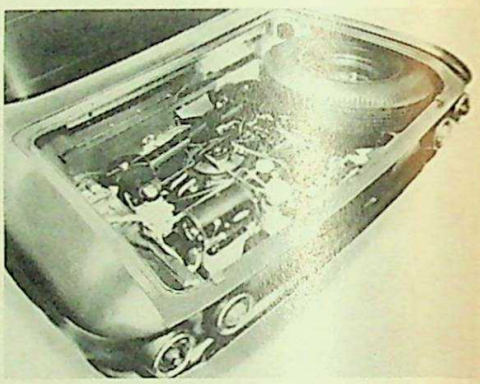
For ready accessibility, the Greenbrier is equipped with six doors, one on each side of the driver's compartment—and double doors at the curbside and at the rear. Side and rear doors open to a full 180 degrees.

Nominally rated at 1,600-pound capacity, the Greenbrier can be converted speedily from a commercial to a pleasure vehicle. As a bus, nine passengers and 250 pounds of luggage or six passengers and 700 pounds of luggage can be transported. With single, three-passenger seat, the cargo accommodation totals 175 cubic feet.

The Lakewood station wagon which, like the Greenbrier, houses its six-cylinder engine under the flat luggage compartment floor, is built with the same superstructure that characterizes the larger 1961 Chevrolet station wagons.

Higher Than Sedans

The vehicle is approximately two inches higher than Corvair sedans and is equipped with four doors and a folding rear seat. With seat down, the enclosed load can reach nearly 6.5 feet in length. In total, the body adds 58 cubic feet of cargo capacity to the ten cubic feet under the hood.



In the 1961 Corvair, spare tire (with lock) now is located in the engine compartment. The battery is on the left side of the car.

To aid operating economy, a manual choke replaces the former automatic. Recirculation of engine cooling air, more precise fuel metering and a lower rear axle ratio also furthers gas mileage. At the same time, torque has been boosted by increasing engine displacement to 145 cubic inches.

Two Engine Choices

Engines of 80 or 98 horsepower in specified models and three and four-speed manual shifts are available, as well as an automatic transmission.

Listed among the optional items is a "perimeter hot air heater" which employs a mixing and blending chamber back of the rear seat and a blower to propel heat forward through ducts to the passenger compartment. Outlets are built near the floor, just forward of the front seat and beneath the rear seat. The gas-fired heater, used in 1960, also is offered as an accessory.

Gerstenberg Becomes GM Vice-President

Directors of General Motors Corporation have elected Richard C. Gerstenberg as vice-president in charge of the financial staff of the corporation. He had been treasurer of GM since April 2, 1956. Directors also elected Oscar A. Lundin, presently comptroller of the Allison Division, to succeed Gerstenberg as treasurer.

R. GERSTENBERG

Gerstenberg assumes the position held by George Russell until Oct. 6, 1958, when he was elected executive vice-president-finance of General Motors.

A graduate of the University of Michigan in 1931 with a degree of bachelor of arts, Gerstenberg joined the Frigidaire Division of General Motors in Dayton the following year as a timekeeper. In 1934, he was transferred to the comptroller's staff of Fisher Body Division in Detroit. Two years later, he joined General Motors central office financial staff in Detroit and was appointed assistant comptroller in 1949. He held that position until his appointment as treasurer of GM in 1956.

Gerstenberg is a director of several General Motors subsidiaries including General Motors Acceptance Corporation, Motors Insurance Corporation and Yellow Manufacturing Acceptance Corporation.

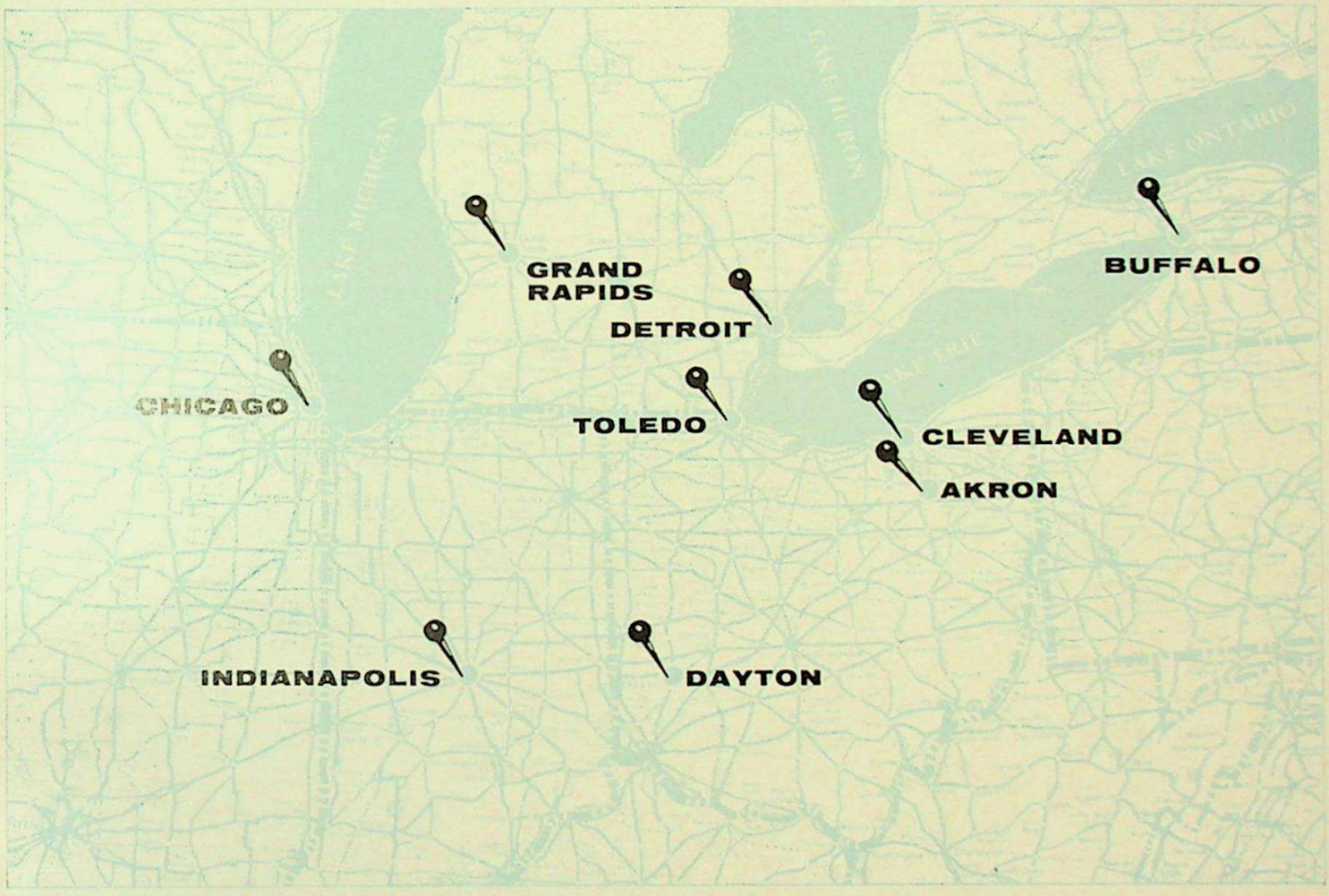
Lundin was graduated from the University of Michigan in 1932 with a degree of bachelor of arts in business administration. He began his career with GM in October, 1933, at the Chevrolet Gear and Axle plant in Detroit. In 1938, Lundin was transferred to the GM central office financial staff, becoming general auditor there before his appointment as comptroller of Allison Division at Indianapolis, Ind., in 1954.

APPROVES BRIDGE BONDS

The State Administrative Board has approved the sale of two bond issues totaling $16,250,000 to finance construction of an international Bridge across the St. Mary's River, linking the Michigan and Ontario cities of Sault Ste. Marie.

PENINSULAR'S Team of
9 Steel Service Centers
working together to give you
STEEL plus SERVICE

America's Largest Independent Tool Steel Distributor



TOOL STEELS • ALLOYS • COLD DRAWN • HOLLOBAR

PRECISION GROUND STEELS • DRILL ROD • PLATE

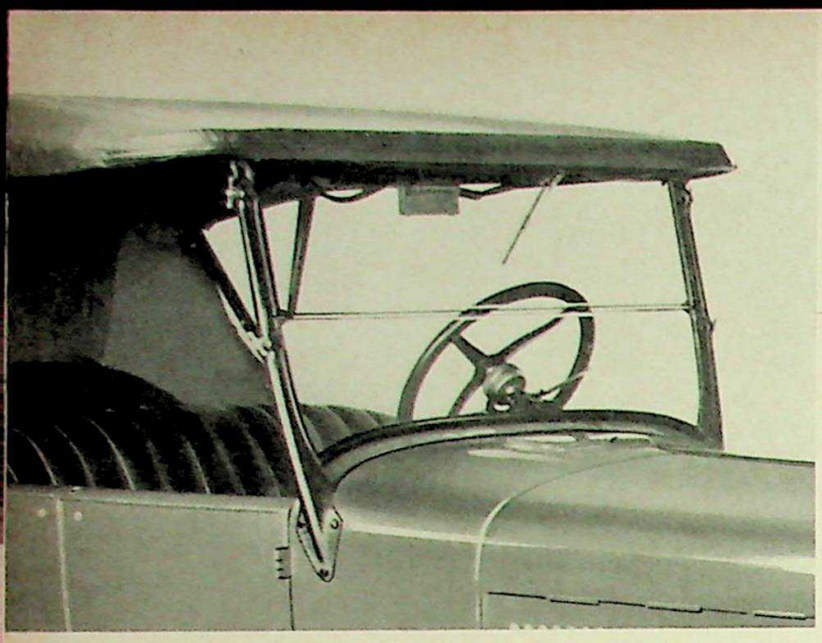
Over 40 Years of Service to Industry

PENINSULAR STEEL COMPANY

24401 GROESBECK · P. O. BOX 3853 · DETROIT 5, MICHIGAN

DREXEL 1-9400 · PRESCOTT 8-2121

DETROIT • CLEVELAND • INDIANAPOLIS • TOLEDO • AKRON • DAYTON • CHICAGO • GRAND RAPIDS • BUFFALO



Here is the windshield of a Ford touring car of 1922 vintage showing the two-piece type employed in that era, with the flat straight panes of the day.

Contrasted is this windshield in the 1961 Buick Special station wagon, with its curved, one-piece windshield which provides far greater visibility for the driver.

Evolution Of Car's Glass

(Continued from Page 13)

in case of accident rather shuddering to look back on.

The only recorded instance of laminated safety glass (LSG) used in production up to that time was the Ford Motor Company's use of it in the manufacture of aeroplanes, we are reminded by researchers for Shatterproof Glass Corp. This Detroit concern, a pioneer in this revolutionary new field, was founded in 1922. It produced one of the first curved lights used in auto production, installed in the back window of 1940 Studebakers and 1940 Willys Overlands. Since that time the concern has confined its efforts to the auto glass replacement market.

How LSG Is Made

Ford in 1927 began using LSG in auto windshields, and other car makers quickly followed suit, not only with safety windshields but later in all other windows and openings as well. In fact, by 1928, shatterproof glass was standard on Ford, Cadillac and La Salle, among others.

This all came about because of the development of the closed body, which demanded an automobile glass that not only would provide comfort, but protect the passengers as well.

Laminated safety glass is composed of two pieces of polished plate glass and vinyl plastic. It is made by "tacking" the glass and plastic together in a sandwich which is then put into an autoclave—a type of huge pressure cooker containing heated oil.

In the autoclave the glass and plastic is "pressured" into one perfectly transparent, inseparable unit. The plastic layer prevents the sheets from shattering under impact.

Curved Windshield Shown

(There are many types of laminated safety glass, ranging from twin wrap automobile windshields to aircraft glass of multiple layers which resists high power projectiles and the friction of supersonic speeds.)

In the beginning it took several years' development work to find the most effective interlayer and bonding materials, to work out the mechanical techniques and equipment for laminating, and transfer the findings into production machinery to meet swelling auto demand.

When LSG was first manufactured around the late 1920's in the United States, it followed the European methods. LSG had been manufactured in Europe as early as 1912, being born with French and British patents issued in 1910.

In the early processes they used cellulose nitrate and a gelatin adhesive between the two sheets of glass. But extensive use of windshields with this material showed that the glass turned foggy or brown under the constant glare of the sun. In addition, solar rays broke down the adhesive, causing mottled or "bubbled" appearances in the glass.

Even so, the early LSG had by the 1930's eliminated ordinary plate and sheet glass in all cars—a major step in the glass and automotive industries.

LSG Plastic Is Improved

As early as 1934 the first curved laminated safety plate glass windshield had been produced. The mid-1930's also saw no-draft ventilation being built into Fisher bodies.

Dissatisfied with the old plastic interlayer, scientists developed during the mid 1930's, after much research, a resilient plastic that was custom-designed specifically for the manufacture of LSG. It was called polyvinyl butyral. This new inner-layer provided a superior LSG—introduced formally in 1939—and to this day no other substance has appeared on the scene to challenge its use.

The new LSG sandwich not only provided a better product through a superior material, but simplified many of the production operations by eliminating the need for adhesives for cementing the glass-plastic layers and edge-sealing of the finished laminated product.

Heat-Absorbing Glass

In 1947, a third important landmark in the manufacture of automotive glass was set up as technical people in the glass field worked on glass compositions that would permit selective transmission of portions of solar radiation. This resulted in development of the heat-absorbing type of glass which provides greater comfort for the passenger. It also permitted the areas of glass in cars to be increased substantially, beginning a trend which still continues.

Special Bending Equipment

Also, research during World War II evolved another type of glass with a surface that can conduct electricity. When the current is turned on, this glass will heat up and prevent ice from forming. It found use on ships and planes, and showed up in the early 1950's in the windshields of custom-made cars. It might some day become standard on the family auto.

In this post-war period, automotive designers aimed for both greater streamlining and better vision in cars. This called for the manufacture of curved safety glass for windshields and backlights, the 1950's ushering in the substitution of one bent piece of glass for former two- and three-piece sections.

Auto glass bending into highly complicated shapes requires intricate equipment and carefully-controlled furnaces. Any optical distortion, which can make a driver dizzy and otherwise be a safety hazard, is cause for rejection.

The operation of bending flat glass into highly complicated curved products involves the use of special metal molds and a bending lehr—an oven. The latter, a 20 foot-square "tunnel" several hundred feet long, has delicately graduated heat zones. To begin the operation, the flat glass is placed in a mold. This moves automatically through the lehr. The heat causes the glass to conform to the shape of the mold. At just the right second the heat is lessened and the glass begins to harden into the curved shape.

Advent of the Panoramic

The first curved windshield, except for a few special cars, was used by Chrysler in a 1934 Imperial line, which apparently totaled only a few hundred units. There was a limited use of curved windshields in more cars starting in 1940 and by 1946 most windshields were curved. The

(Continued on Page 32)

Performability...

Goes so great,

You have to drive it to believe it!

Just a tap of the toe, you go! Just a twist of the wrist, you turn! That's the new Lark with Performability. Lightning-like responsitivity and a completely new power plant with engine choice give you performance leadership over the entire field of compacts.

A new OHV six-cylinder engine with ram-induction manifolding and huge valves squeeze more power out of less gas, while every powerful stroke of the pistons makes this Lark go with exhilarating acceleration. Want even more action? Try The Lark V-8 with two or four-barrel carburetor!

New recirculating ball steering, new suspension configuration, new bigger bonded brake linings add up to such sure, safe control, that every business trip becomes a pleasure and every pleasure trip a sheer delight. But remember, you've got to drive The Lark to believe it. Visit your Studebaker Dealer for the proof.

The '61 LARK by Studebaker

The Lark is available in seven body styles—2 & 4-door Sedans and 2-door Hardtop, 2 & 4-door Wagons, Convertible & the expansive new longer wheelbase 4-door Cruiser (luxury car of the compact class).

This four-door station wagon has been added to the newly styled Rambler American line for 1961. A two-door station wagon also is offered. All are built on a wheelbase of 100 inches.

The completely restyled 1961 Rambler American is 5.2 inches shorter and three inches narrower than past models but offers room for a family of six. At the same time, useable luggage space is 50 per cent greater.

Rambler American Offers Styling Change

For the first time since its introduction more than ten years ago as the original compact car, the Rambler American for 1961 sports completely new styling, it was revealed by American Motors' announcement of the new line early in October. They were placed on public sale on Oct. 12.

A convertible and a four-door station wagon have been added to the line, which also includes two-door station wagons and two-door and four-door sedans. A total of 13 models are offered for 1961. The convertible will not be available until about the first of the year.

The 1961 Rambler American also has reduced exterior dimensions but with the same interior room for six persons. The 100-inch wheelbase American is 5.2 inches shorter—now 173.1 inches in length—and three inches narrower than last year's model. The reductions in bulk were made possible by reducing the front and rear overhang, and by slimming down the side panels. At the same time, usable trunk space has been increased 50 per cent to 23.8 cubic feet.

Over Five Inches Shorter

The new American continues the features which helped Rambler revolutionize the automobile market—all-welded single-unit construction, "Deep-Dip" rustproofing, top ease in handling and maneuverability, fuel economy, simplified maintenance, reclining seats and others.

A new long-life standard-equipment feature for 1961 is the ceramic-armored exhaust system, guaranteed to the original owner for as long as he owns the car.

The 1961 American's flat roof line complements the overall design as well as provides additional headroom at the outward edges. Body styling features a concave sculptured panel which runs the length of the car. The lower indented line at the rear carries around and across the trunk.

New Aluminum Grille

The low hood with the larger windshield provides excellent road visibility. The wide aluminum grille with a fine rectangular pattern is framed with a tailored chrome die casting. The one-piece bumper is recessed at the lower center section for placement of the license plate. The parking-turning lights are recessed under the bumper.

Purchasers have a choice of two engines and three transmissions with standard axle ratios to provide top economy balanced with all-around performance. High-performance axle ratios are optional at no extra cost.

The 125-horsepower overhead-valve Six is standard on all Customs and optional on Super and Deluxe models. Standard on Super and Deluxe models is the L-head Six which develops 90 horsepower.

A special economy feature of the 125-horsepower engine is the unique water-heated intake manifold cover which provides quick warming of air-fuel mixture, especially beneficial during cold weather. An improved carburetor also is used.

Both engines have larger camshaft bearings for longer life, and the crankshafts have been changed for smoother operation. Both also have new carbon-core high-tension wires for better ignition operation.

Rear Door Height Raised

Heights of the rear doors on all models have been raised to allow easier entry and exit.

The famed Rambler Weather Eye heating and ventilating system has been improved. Two air intakes, one on each side of the instrument panel, have been added to bring in fresh air directly without passing through the system's ventilators as before.

All-Season air conditioning also is new and is available as either factory-installed equipment or as a dealer-installed item.

Along with the new exterior design, American interiors have been completely changed and individually adjustable front seats are offered on the 1961 Americans for the first time. The floor surface over the transmission has been lowered for more foot room for both front and rear seat passengers.

Super and Custom station wagon models continue to feature a roof rack. The upper section of the tailgate, which is framed in aluminum, can be set in three positions.

Powered Convertible Top

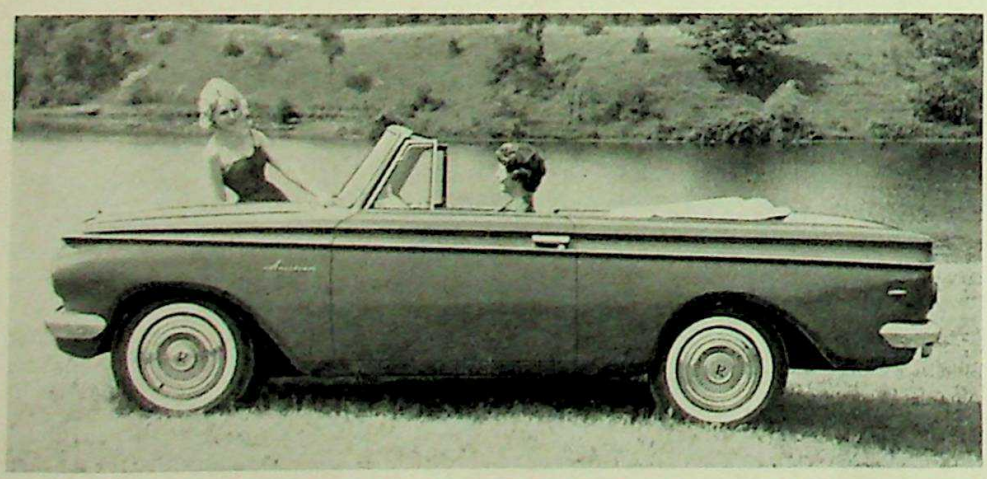
The new convertible features an electric-hydraulic powered top in black or white vinyl.

Power brakes are a new option for 1961, while power steering is again an optional choice.

Windshield wiper blades have been increased in length so that they overlap when operating. Nozzles of the windshield washers have four holes instead of two for better cleaning.

Glass area of the two-door sedan has been increased 71 square inches over 1960 models, while that of the two-door station wagon is 409 square inches more.

None of the 15 colors for 1961 are new. On all sedan and station wagon models, 26 two-tone combinations are available.



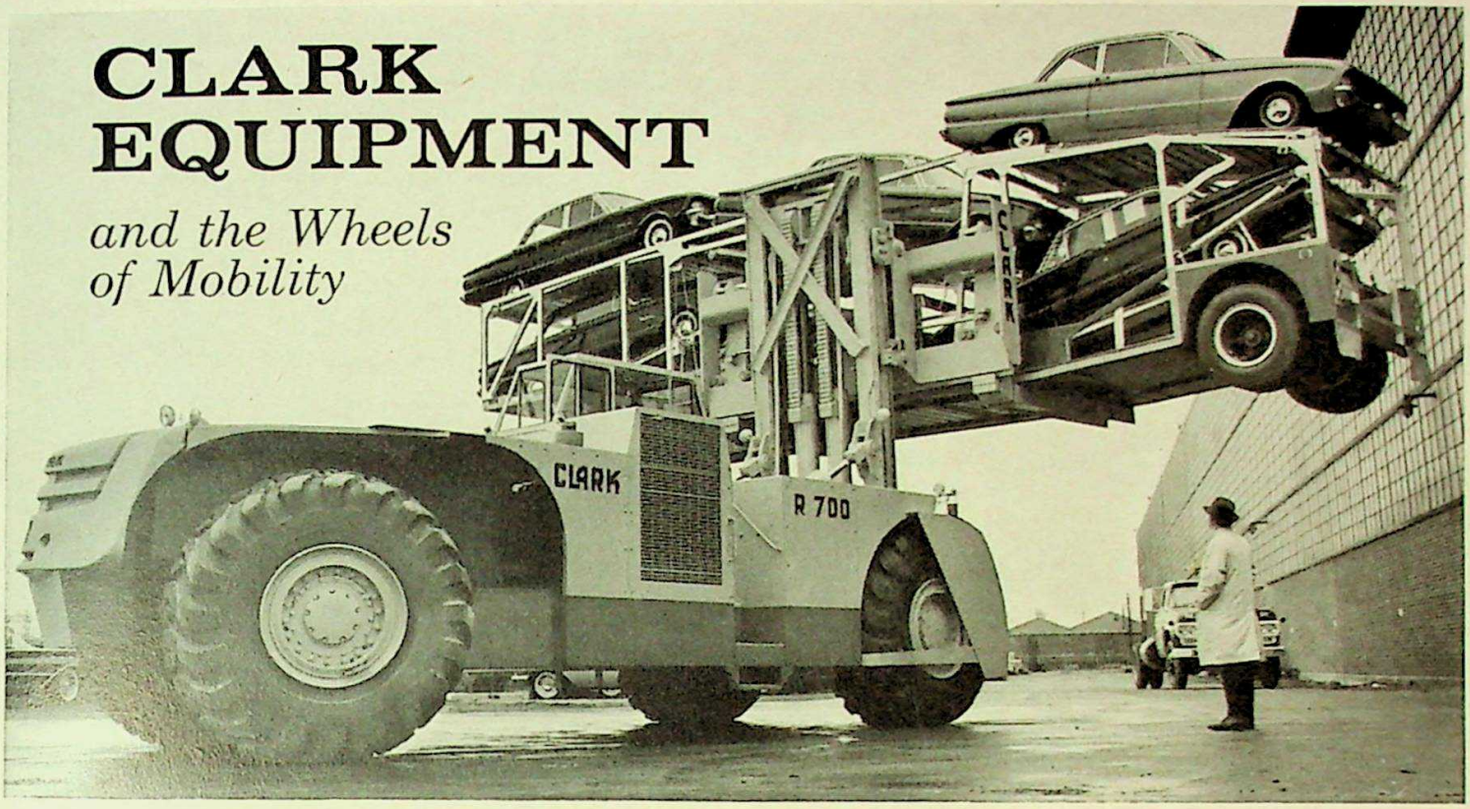
Newly added to the Rambler American line in 1961 is this smart looking convertible which, however, will not be available until the first of the year. Also newly added for 1961 is a four-door station wagon.

SECURITIES FIRMS MERGED

Merger of two Detroit securities firms—the former Carr, Logan & Co., and Harris & Co.—became effective on Sept. 6, with the office staff and key personnel of the former joining Harris & Co. at the latter's Book Building office under the new firm name of Harris, Logan & Co.

CLARK EQUIPMENT

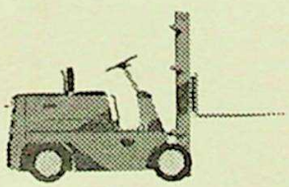
and the Wheels of Mobility

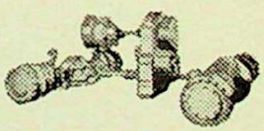


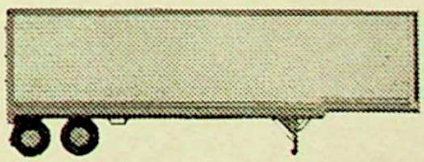
You'll see the "wheels of freedom" on display at the National Automobile Show. And everywhere, working to keep these wheels rolling, you'll see Clark's *Wheels of Mobility*. Mobile fork trucks toting everything from tachometers to transports. Huge earthmoving machines constructing plants and highways. Giant semis hauling materials to and from hundreds of truck terminals. Automotive drive components in countless applications. Thousands of Clark units keeping the wheels rolling for the free world... for Detroit . . . *for you*.

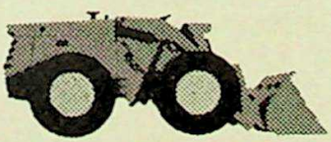
Manufactured in Michigan and Indiana by
CLARK EQUIPMENT COMPANY
Buchanan • Benton Harbor • Battle Creek • Jackson • Michigan City

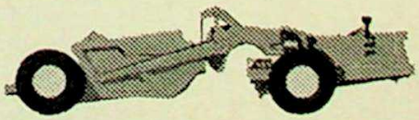
CLARK® EQUIPMENT

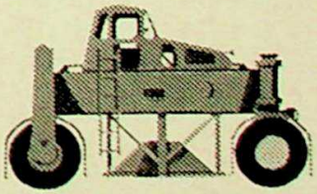

LIFT TRUCKS


POWER TRAINS


TRUCK-TRAILERS & BODIES


TRACTOR SHOVELS


EARTHMOVING SCRAPERS


STRADDLE CARRIERS

Car's Glass Usage Mounts

(Continued from Page 28)

curvature of these windshields was relatively shallow until 1954 when the so-called wrap-around windshield was first produced. The next major change in windshields came with the introduction of twin-wrapped or compound windshields in 1957. In that year, too, the Chrysler Imperial line became the first volume car to use curved glass in all body openings.

The Panoramic windshield, of 1954, was introduced in the Cadillacs, Oldsmobiles and Buicks. This wrap-around had been appearing the year before in special sports cars and "cars-of-the-future" models. Before long the Panoramic had been adopted generally throughout the industry. Its advent had been preceded by the wrap-around backlight. The first production use of curved rear windows occurred in 1940 models but they did not begin their rapid spread until immediately after World War II.

Absorbs Harmful Radiation

So, some of the more spectacular and practical developments in modern safety glass have been in the automotive field. Windshields of laminated plate and backlights of tempered safety glass curve in four directions and provide maximum safety and comfort to motorists through increased visibility.

So much for curves. Another problem was glare and heat. Heat-absorbing, glare-reducing glass had been available for many years before the War but apparently was not used to any extent until 1941 and it was not offered generally as optional equipment until about 1950.

At that time the larger glass areas magnified the problem of sky brightness and ingress of solar radiation, so development work was pressed on a special glass to selectively absorb ultra-violet and infra-red radiation, and adoption of this glass spread rapidly. The Libbey-Owens-Ford E-Z-Eye safety plate glass and the Pittsburgh Plate Glass Company's Solex are examples.

Scientists had established that some of the ultra-violet energy is harmful to the eyes, it accelerated the fading of fabrics, and at least has no value for seeing, so any reduction was beneficial.

Likewise, the infra-red has no value in seeing, and any reduction of its ingress had the added benefit of decreasing radiant heat transfer. In localities of very bright sun, and in summer months generally, this lower light transmittance proved a distinct aid to better seeing for daytime driving.

LSG Windshield Standard

In 1951 the shaded band was incorporated in the plastic used in making windshields, the effect being achieved by graduation dyeing of the upper portion, a safety measure of great importance. In 1957, a similar effect was achieved by depositing material on the surface, and this was offered on some rear windows.

So, for more than 30 years, LSG has provided safety for American car owners and is the only kind of glass that can be installed in the windshields of motor vehicles, according to an established code set up by the American Standards Association. This code was legally adopted in all but three states—exceptions being Nevada, Hawaii and Alaska.

Just within the past couple of years has any change occurred in the type of glass used in cars, and this only regarding side and vent windows. Gradually during this period, various car makers have changed to tempered or case-hardened glass in these side openings, the same as the glass used in the curved rear windows for many years, practically eliminating laminated side windows in the 1961 models.

Tempered safety glass is made of either plate or sheet glass. Tempering increases the strength of ordinary glass four to five times and gives it very high impact resistance. It is done by first heating the glass to extremely high temperature in a large furnace. When it reaches this temperature it is subjected to a sudden and uniform chilling of the entire surface by blasts of cold air, causing high compression of its surfaces. The chilled glass is then cooled gradually to room temperature.

Will Glass Use Mount?

When broken, laminated safety glass is held together by its own "gummy" plastic interlayer, no part of the glass will fly off and no sharp splinters or cutting edges are exposed. It also stops, or greatly slows down, speed of stones or other missiles that may strike or break it.

Tempered safety glass, upon reaching the limit of its high mechanical strength, seldom holds together in one piece. Instead it "explodes" into small granular regular fragments with relatively smooth edges.

So, we have seen that since immediately after World War II there developed a trend to larger glass areas which provided the designers with the streamlined effect they desired. At the same time this provided better vision, fewer blind areas and increased comfort and beauty.

As an example: A 1930 Big Three 4-door sedan had the following approximate glass areas: Windshield—4¼ square feet, rear window—2 square feet, side windows—15½ square feet, total—just under 22 square feet. A 1961 4-door sedan of the same make has the following areas: Windshield—14¼ square feet, rear window—14¾ square feet, side windows—14¾ square feet, total—43¾ square feet.

A Car's Structural Member?

Will the curve of expanding use of glass flatten out? That's for the technicians to settle. Until some arguments about the role of glass as a structural member of your automobile are settled, the question is moot. "Glass as a Structural Member in Automobile Bodies" was the topic of a paper presented before the Society of Automotive Engineers at their meeting in Detroit, Jan. 13, 1959, by Dr. George B. Watkins, of Libbey-Owens-Ford Glass Co.

That this subject needs further research was the consensus of his paper and of discussion of Dr. Watkins' paper by Fisher Body's P. O. Johnson and by L. W. Parr, of Chrysler.

Meanwhile, many designers will want as much or more steel in the body for structural strength, while the glass men, backed by the stylists, are fighting to extend and hold their gains.

Now they are rolling the glass in compound curves up into the roof. In the early bending of glass the distortion was marked in the corners. But they have greatly improved the process and techniques and will attempt shapes not dreamed of before. That puts the bubble top in the realm of possibility in the future.

(Metals on Page 50)

King-Seeley Reveals Merger Agreement

Stockholders of King-Seeley Corp., Ann Arbor, and of The American Thermos Products Products Co., Norwich, Conn., will meet separately on Nov. 9 to vote on an agreement, already approved by the boards of directors of both concerns, for the merger of the two companies with King-Seeley as the surviving corporation. Its name would be changed to King-Seeley Thermos Co.

The agreement provides for the issuance of 1.55 shares of King-Seeley Thermos stock in exchange for each share of Thermos stock held by its stockholders, and the conversion of each share of King-Seeley stock into two shares of King-Seeley Thermos stock, thus effecting a 100 per cent stock distribution to King-Seeley stockholders.

For the fiscal year ended July 31, 1959, King-Seeley Sales were nearly $46,000,000, while those of American Thermos for the fiscal year ended Dec. 31, 1959 were $31,211,500.

King-Seeley Corporation has plants in Ann Arbor, Ypsilanti and Menominee, Mich.; and in Albert Lea, Minn. Its principal products are automotive instrument panels, speedometers, gauges and governors, ice machines for making flake and cube ice, electrical control mechanisms, power tools, and outdoor recreational equipment.

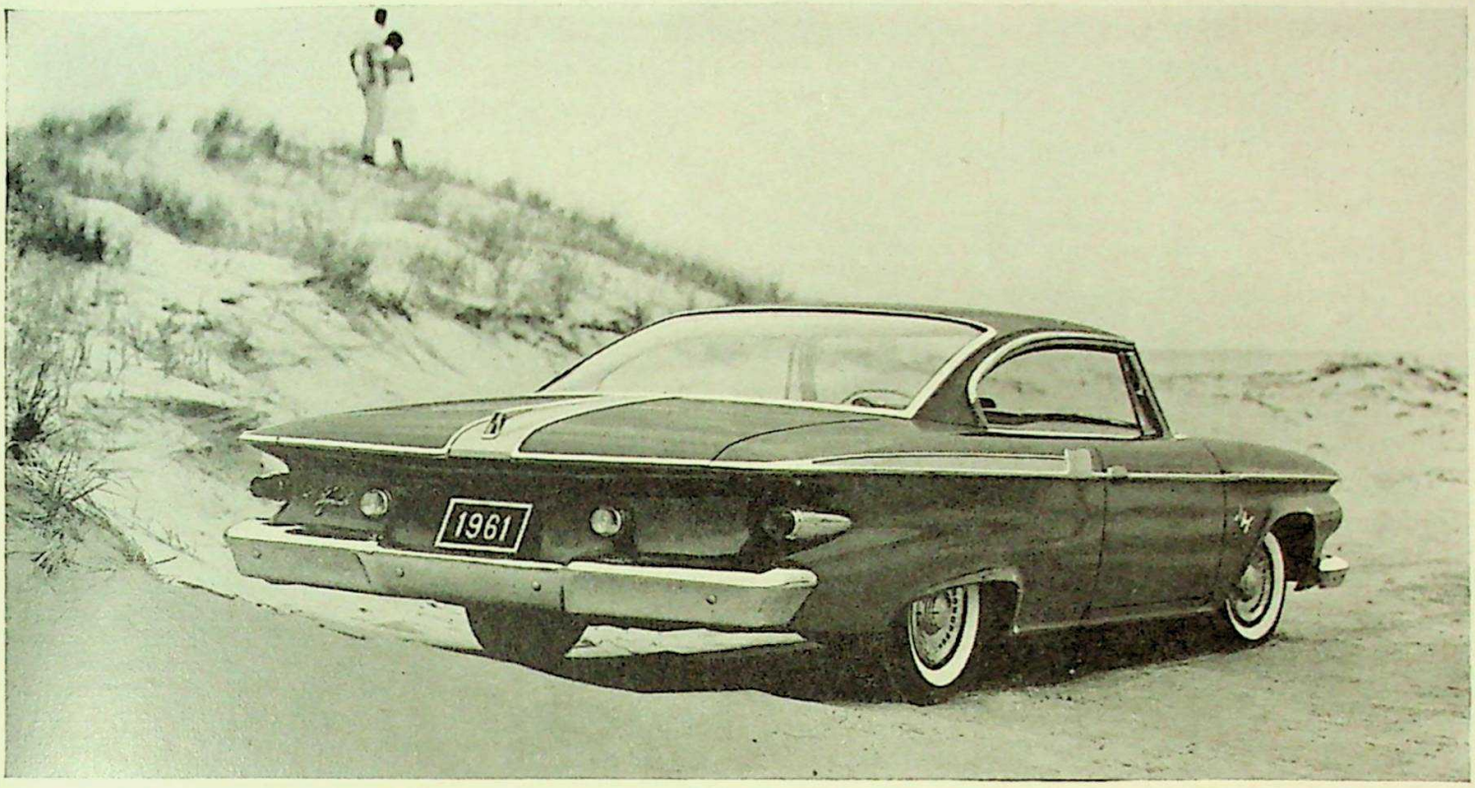
The American Thermos Products Company has plants in Norwich, Conn.; Macomb, Ill.; Anaheim, Calif.; Crawfordsville, Ind.; Toronto, Ontario; and London, England. Its principal products are vacuum insulated ware and insulated containers consisting of bottles, jugs, carafes, workmen's and school lunch kits, picnic kits, ice chests, water coolers, and molded plastic products.

HEADS CLEVELAND OPERATIONS

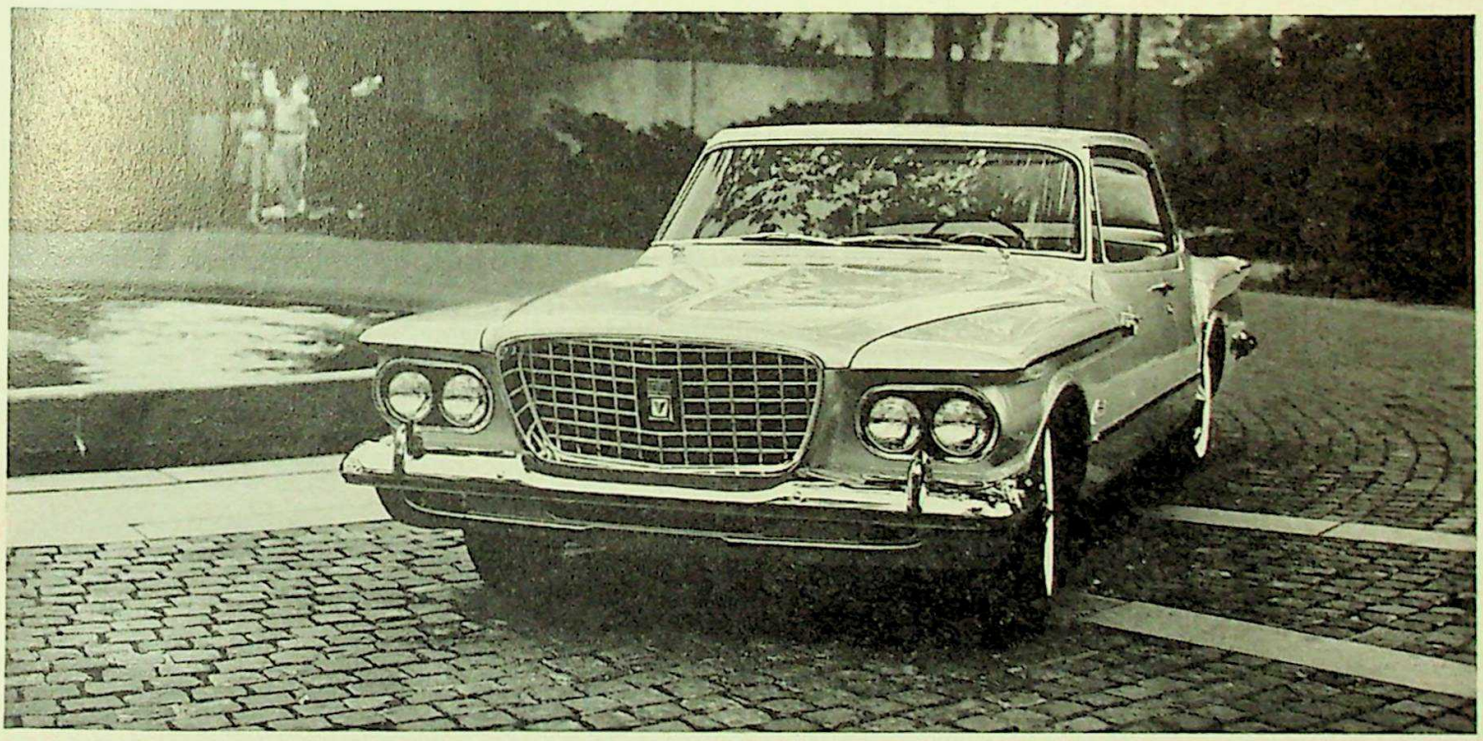
Appointment of Dan Reebel as executive vice-president of the Cleveland operations of Clark & Bobertz, Inc., advertising, public relations and marketing agency, has been announced by G. H. Bobertz, Jr., president.

292ND CONSECUTIVE DIVIDEND

Directors of Parke, Davis & Company, Detroit, have declared a regular quarterly dividend of 25 cents per share—the 292nd consecutive payment since 1878. It is payable Oct. 31 to shareholders of record on Oct. 7.



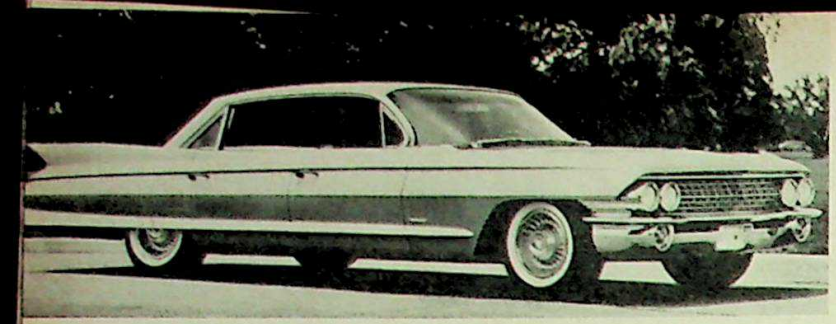
NOTHING BEATS THIS PAIR OF KINGS



When you sell a '61 Plymouth—King of the Road—or a '61 Valiant—King of the Compacts—you deal yourself a winning hand. These popular beauties are low in initial cost. With their all-welded Unibody these cars are designed to last, to really perform. You sell outstanding economy, road-smoothing Torsion-Aire Ride and many other winning features. Remember, when you deal prospects Kings like these, you're dealing yourself a winning hand for many years to come.

PLYMOUTH America's No. 1 low-priced economy car

VALIANT Chrysler Corporation's low-priced compact



Cadillac's all new styling for 1961 is readily apparent from every angle on this six-window sedan. The lean, crisp look is emphasized by the sculptured side metal, by the outward flare of the lower sections of the doors and rear quarter panel, and by the sharp angles of the upper structure of the 1961 line.

Remove all identification features from this 1961 convertible and the very shape of the car says that it is a Cadillac. Contributing to this ease of identification are the symbolic Cadillac tail fins which, although lowered slightly, retain the carefully fitted taillamp. This is the 1961 Cadillac Series 62.

Cadillac Features New Sculptured Styling

Retaining its traditional appearance but featuring all new styling, outstanding comfort dimensions and advanced engineering improvements, Cadillac is offering 12 models for 1961 as compared with 13 last year. A short deck sedan is added to the Sixty-Two Series while the Eldorado Brougham and Eldorado Seville are dropped from the line.

The new sedan model is seven inches shorter at 215 inches in overall length while retaining identical interior dimensions with other six-window sedan body styles. The seven inches were removed from the rear deck.

Reflects Brougham Styling

Although discontinued, the influence of the Eldorado Brougham is reflected strongly in 1961 styling. It is found in the sculptured side metal, the outward flare in the lower sections of the doors and rear quarter panel, and in the distinctive upper sections.

All models have a completely new profile. The upper windshield structure has been redesigned, eliminating much of the wrap-around effect. A thinner roof line adds to the graceful silhouette.

The gleaming new grille is highlighted by jewel-like projectiles, slightly smaller than last year. Retained in 1961 is Cadillac's symbolic tail fin design. New horizontally positioned rear tail lamps are located in the bumper ends.

Overall length is reduced by three inches to 222 inches for all models other than the Series Seventy-Five models, which are 242.3 inches in length. Widths remain unchanged while car heights are increased .1 to 1.7 inches. Wheelbase on all models is reduced by one-half inch to 129.5 inches, except on the Seventy-Five models which retain 149.8 inches.

Dog Leg Eliminated

The top of the door opening has been raised considerably, and there is a narrower rocker sill to step over. The front windshield pillar has been redesigned, eliminating the dogleg. Lower tunnels result from position changes of the engine and transmission. In the rear compartment of the sedans, the rear door swings open an additional 7½ inches and is six inches wider.

The steering wheel is new and smaller in diameter (16 inches).

The new windshield is cleaned by an exclusive Cadillac designed wiper system with overlapping blades, leaving no center blind spot and wiping a 15 per cent larger area.

The Cadillac customer has a choice of 113 harmonizing or contrasting upholstery combinations, an increase of 24 over last year. For the exterior, Cadillac is offering 15 high lustre, long-life acrylic paints and five special Eldorado colors.

The frame is redesigned so that it is wider and shallower in the front section, allowing for a lower front floor. This redesign permits the use of a newly engineered front suspension which brings about greater absorption of road bumps.

Lubrication Need Eliminated

With the generous use of rubber isolators at every point on the chassis, the need for lubrication is eliminated.

With the new front suspension, the front brake drums were moved out into the air stream. Fins were added for even better cooling, permitting the use of larger wheel cylinders which results in better control and shorter stopping distances.

For 1961, Cadillac introduces a new type single exhaust system which will provide twice the life of the former dual system while providing excellent power and performance.

The Cadillac engine retains its compression ration of 10.5 to 1 and the same cubic-inch displacement of 390, producing 325-horsepower.

Additional improvements in ease of handling result from the increased boost from the new steering pump. Less effort now is required in steering and parking. The car is more maneuverable, turning in a 43-foot circle, or three feet less than last year.

Included among the 1961 accessory advancements are: A new rear window defogger; a new non-slip differential; and a crankcase ventilation kit (anti-smog device) which will be standard on all cars delivered in California, and available as an option anywhere.

Michigan Mutual Advances Griffin

Concurrent with its meetings of regional vice-presidents held late in September, H. John Lowry, president of Michigan Mutual Liability Company, announced changes in the company executive group.

B. W. GRIFFIN

Bruce W. Griffin, who has been with the company for 26 years, was advanced to vice-president and will head the company's nation-wide claims organization. For the past six years, he has been in charge of the liability claims section and previous to that headed the Western Michigan claims department. Griffin replaces W. R. MacGregor, who is retiring after 35 years of service.

William J. Warren has been made an assistant vice-president and will head the liability claims section. James J. Schueler, company general claims attorney, assumes the additional duties of assistant general counsel; and John Imesch is advanced to regional claims manager for the Detroit Metropolitan office.

TO SELL ADRIAN PLANT

General Services Administration is expected to set Dec. 1 as the date for the receiving of bids for the sale of the big wartime aluminum extrusion plant in Adrian, which was operated until last April by Bridgeport Brass Co.

With the dropping of the Eldorado Brougham and Eldorado Seville in 1961, the Cadillac Fleetwood Sixty Special (shown here) becomes the "crown jewel" of the line for the coming year. It has a new upper structure that is not shared by any other car, giving it a more formal and distinctive appearance.

The Sixty Special has a wheelbase of 129.5 inches and an overall length of 222 inches. It is 79.8 inches wide and 56.6 inches high. It is powered by a 325 horsepower engine, with a compression ratio of 10.5 to 1.

LOOK FOR THE COACHMARK OF QUALITY

Body by Fisher makes it a better buy!

CHEVROLET · PONTIAC · OLDSMOBILE · BUICK · CADILLAC

★ ★ ★

Most popular Pontiac body style, the rakish four-door Vista hardtop is shown here in the new 1961 Bonneville series. Curving windshield pilars, a slim roof line, and crisply defined side windows create a new custom appeal.

Distinctive Bonneville features include the high performing Trophy V-8 engine with four-barrel carburetor, and luxurious upholstery of pattern cloths and Jeweltone Morrokide. The Vista model also is available in the Star Chief, Ventura and Catalina series.

★ ★ ★

15 Models In Four 1961 Pontiac Series

Fifteen new models in four series are offered by Pontiac for 1961 in what S. E. Knudsen, GM vice-president and Pontiac Motor Division general manager, describes as a "combination of dynamic styling concepts with significant engineering advances to produce the most exciting new car in Pontiac's 53-year history."

The new Pontiac is as much as .9 inch lower, four inches shorter, and 2.5 inches narrower, Knudsen revealed, yet important passenger compartment dimensions have been improved. The famous wide track design, prevailing in each series, also has been increased proportionately.

Cites Engineering Features

Knudsen also cited a new perimeter frame, new front and rear suspension, system, and a lighter weight, more efficient V-8 engine among the car's new engineering features.

Pontiac's lower priced Catalina series is available in seven different body styles including two and four-door sedans, two and four-door hardtops, four-door six and nine-passenger station wagons, and a convertible.

Ventura models include two and four-door hardtops. A four-door sedan and four-door hardtop comprise the Star Chief series. The top-of-the-line Bonneville series offers two and four-door hardtops, a four-door, six-passenger station wagon, and a convertible.

Accentuating the wide, low front end appearance of the 1961 Pontiac is an expansive hood, channeled on either side of the centerline, which tapers forward with narrowed fenders to meet a twin grille of three dimensional design. Each grille houses dual headlamps and an impressive two bar type wrap-around bumper adds further prominence to the front end design.

Long sweeping sculptured lines highlight the side view. A central jet-like boom, mounting a chrome molding, spans the entire length of the car. A channeled surface on the boom centerline provides an ideal location for series designations.

Unique Bumper Design

A unique bumper design, attractively integrated with the body, distinguishes a sharply profiled rear end. Sweeping abruptly upward to cap the rear fenders, the bumper frames a rearward slanting trunk lid and a narrow panel containing tail lamps and Pontiac or series name. Bonnevilles and Star Chiefs feature three matching tail lamps of circular design, while the Catalina and Venturas are equipped with an oval-shaped, dual bulb lamp. Safari tail lamps are integral with the chrome rear fender caps.

Curving pillars framing a generous Vista-Panoramic windshield combine with the sharper lines of the side windows and a slim-line roof to create a new custom appeal. The new design eliminates the windshield corner extension on all models and the triangular rear side window on four-door sedans.

Magic-Mirror finishes, a highly durable acrylic lacquer, is available in 15 solid colors and 57 two-tone combinations. Harmonizing with the exterior colors are 88 interior trim combinations.

Wider Opening Doors

Interior comfort is enhanced by a 12 per cent increase in front seat to steering wheel clearance and wider opening doors for greater ease of entrance and exit; a 2.3 inch increase in front seat height is provided in most models; and floor tunnel height also is reduced. Head room has been improved by as much as two inches.

Wheelbases measure 119 inches on the Catalina and Ventura models and the Bonneville Safari; 123 inches with Star Chiefs and other Bonnevilles. Overall lengths begin with 209.7 inches with all Safari models and extend to 217 inches with sedans and coupes in the Star Chief and Bonneville series. Although the new car is reduced 2.5 inches in width, the wide track is only decreased 1.5 inches to insure continued superb roadability.

Wide Choice of Engines

Renowned for its superb performance, efficiency and reliability, the 389 cubic-inch Pontiac "Trophy 425" V-8 is offered in a broad selection of standard and optional versions with major design advances and improved economy. Standard with all models using synchromesh transmission are regular fuel V-8s with 8.6 to 1 compression ratios. Premium fuel V-8s with 10.25 to 1 compression ratios are available with all models equipped with Hydra-Matic transmission. Pontiac's popular economy engine with 8.6 to 1 compression ratio and two-barrel carburetor operates on regular fuel and is a no extra cost option with models utilizing Hydra-Matic.

Other options available with either synchromesh or Hydra-Matic include premium four-barrel and three two-barrel carburetor engnes with compression ratios ranging up to 10.75 to 1.

Contributing to the increase in passenger compartment space is a new perimeter frame. Parallel side rails completely encircle the passenger compartment to permit lowering of the floor. Five cross bars mount engine and chassis components and add structural rigidity. Rubber-insulated body mounts guard against the transmission of vibration and noise to the body.

★ ★ ★

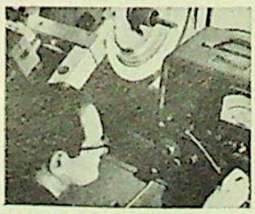
Shown here is the two-door Pontiac Ventura sport coupe and a luxurious four-door Star Chief sedan, two of 15 models in the 1961 Pontiac line. The Ventura displays a unique twin grille of three dimensional design, the Vista-Panoramic windshield, and the new side sculpturing.

The Star Chief exhibits new hardtop styling for sedans and the slimline roof and elimination of the rear side third window. Sharply profiled rear quarters feature an upswept bumper which frames an expansive trunk lid and three matching tail lamps, designed especially for the Star Chief and Bonneville series.

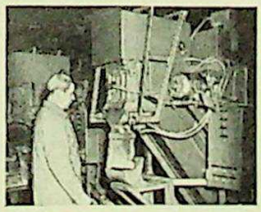
★ ★ ★

The naked eye can't spot the difference...but the "*Uniformity Sorter*" rejected one of these tires. This is another of the 234 different quality controls that safeguard the quality and assure the uniformity of U. S. Royal "Low Profile"* Tires.

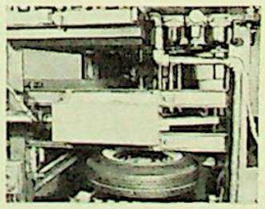
Here's why the top 1961 cars choose U.S. Royals!



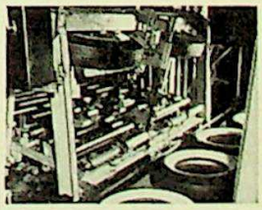
ELECTRO-PNEUMATIC device measures variations in "roundness" of tires to 47-*thousandths of an inch.*



AUTOMATIC COMPOUNDING of rubber assures uniform batching, greater safety and much longer wear.



OUT-OF-BALANCE TIRES are rejected automatically by a special machine with unerring accuracy.



PRESSURE-TEMPERED to relieve and equalize the working strains in the cured tires, and to assure uniformity.

Car manufacturers, dealers and buyers agree: the quality-controlled U.S. Royal "Low Profile" Tire is the Big One for '61. This great original-equipment tire has all the newest features that enhance the safety, feel and appearance of the best new cars.

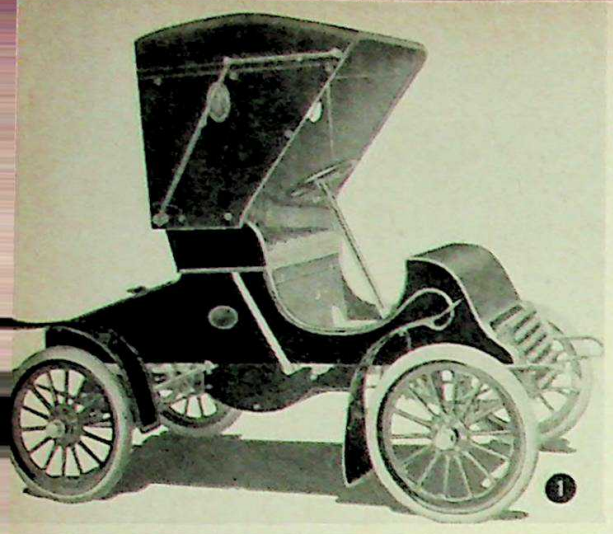
U.S. ROYAL *LOW PROFILE** TIRES

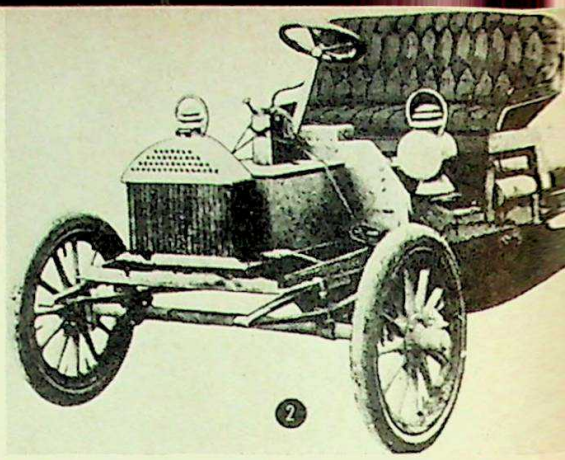
*"*Low Profile*" is United States Rubber Company's trademark for its lower, wider shape tire.*

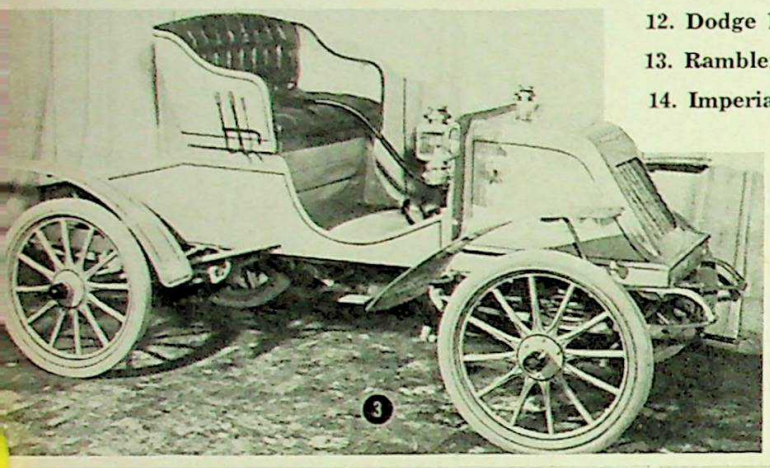
United States Rubber
Rockefeller Center, New York 20, New York

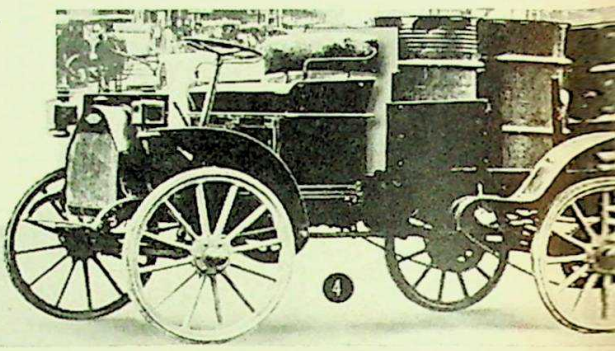
FIRST MODELS BY—

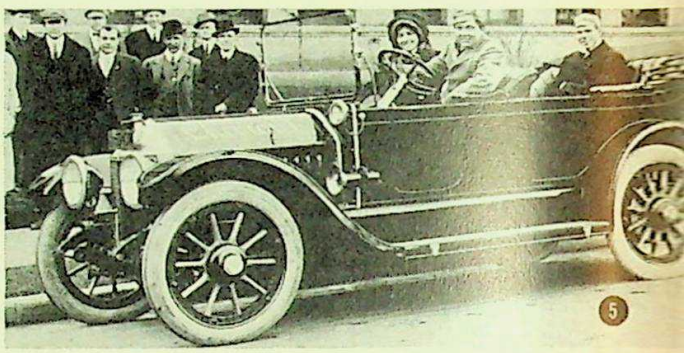
1. Cadillac (1902).
2. Buick (1903).
3. Overland (1903)
4. Reo Truck (1911).
5. Chevrolet (1912).
6. Ford Truck (1918).
7. Chevrolet Truck (1918).
8. Pontiac (1926).
9. De Soto (1929).
10. Ford-made Lincoln (1922).
11. Corvair (1960).
12. Dodge Dart (1960).
13. Rambler American (1950).
14. Imperial (1926).

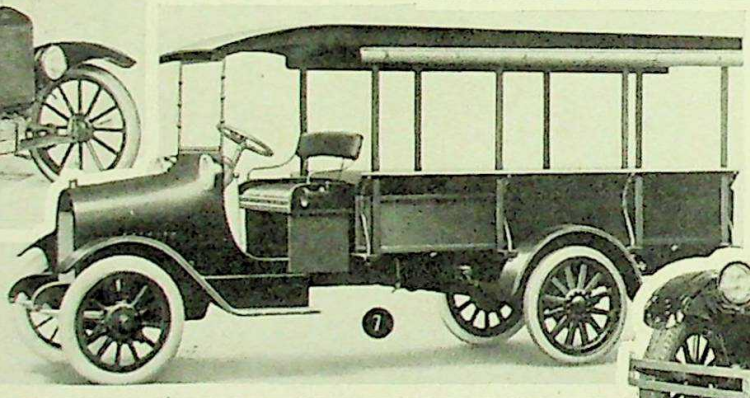


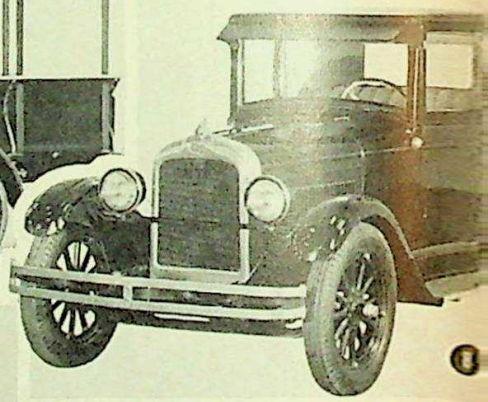


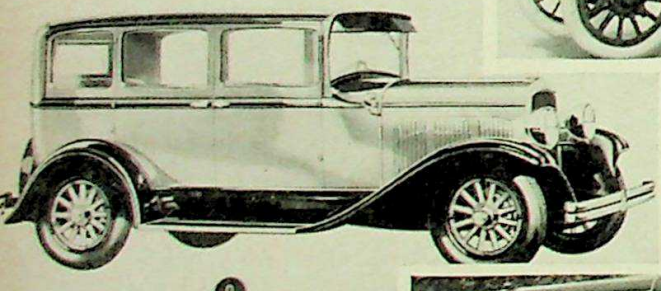


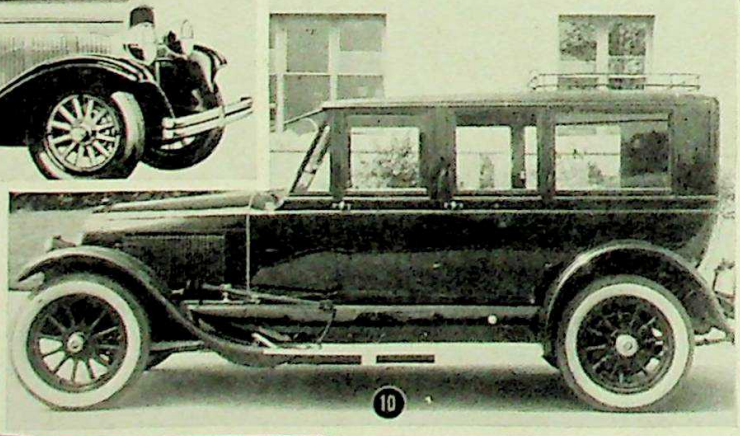


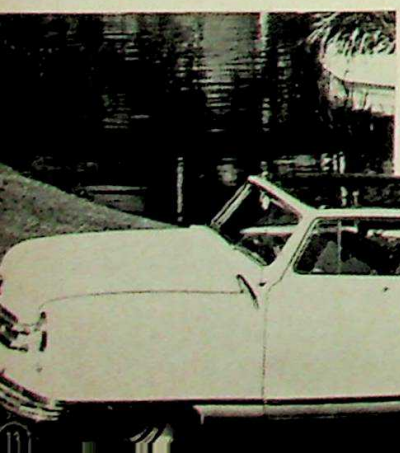


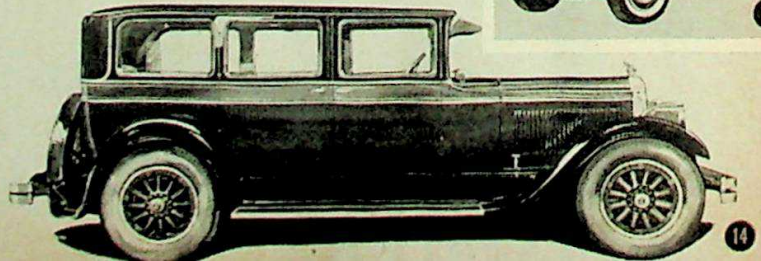








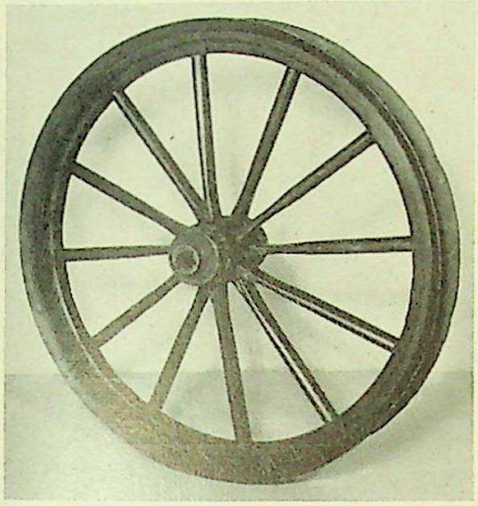




Man's Greatest Invention . . . The Wheel

As America continues its exodus to the suburbs, her inhabitants become increasingly dependent upon man's greatest invention, the wheel.

In fact, more than 50,000 communities are now served exclusively by the truck-



The wheel used on the 1904 Oldsmobile looked like this, with its wooden spokes and groove for solid tires.

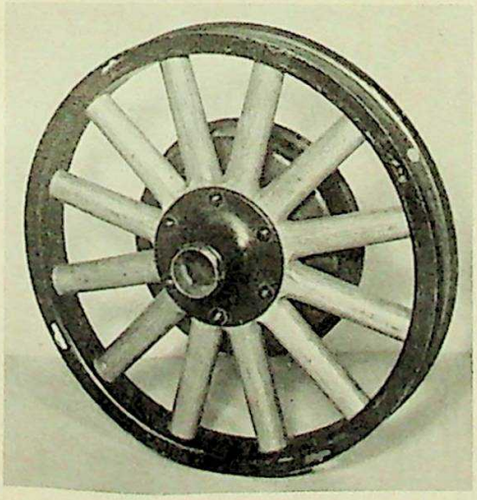
ing industry, and nearly every family today has its own automobile.

These are but two of the multitude of modes of transportation that depend upon the wheel for their existence, and in turn we depend upon so heavily.

Million A Month

The business of the wheel has become big business. Last year, the industry manufactured for use on cars and trucks alone, more than 38,000,000 wheels. One of the industry leaders, Motor Wheel Corporation, of Lansing, for example, makes more than a million wheels a month.

As we come to rely upon the wheel more and more, we in fact begin to become oblivious of its existence. This role that the wheel plays in our modern way of life is not newly won. It has been obtained through an evolutionary process that began more than 5,000 years ago



By 1926, Chrysler was using this natural wood spoke wheel on its models of that day.

when the Elamites, an ancient tribe from the Tigris-Euphrates Valley, located in what is now Iraq, first fashioned a wheel that revolved about its own axis. Prior to this, log rollers had been in vogue.

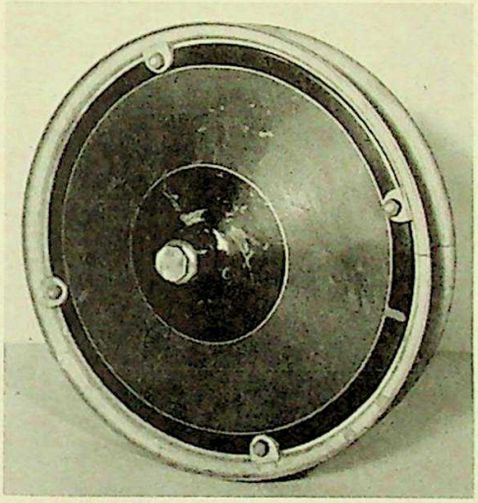
The initial step toward the wheel came when these rollers were notched near each end to permit retaining pins to keep them captive beneath the vehicle, instead of rolling out the back only to be hand-carried around to the front again.

Cross-Section Of Tree

With this method, the notches soon wore down letting the center of the roller rub against the bottom of the vehicle. To overcome this, the center of the roller then was carved or burned down to a very small diameter while either end of the roller was left its original size to act as wheels. The last step then, before the wheel became a wheel, was freeing these solid discs from their axle.

This was the work of the Elamites. And their wheel-wrights soon added metal bands to the outside of the disc for use as "tires" to prevent rapid wear.

All forms of the wheel, from this earliest Elamite wheel through the first wheels of the Egyptians in about 1500



In 1928, this was the double disc steel wheel used by the Ford cars of that year.

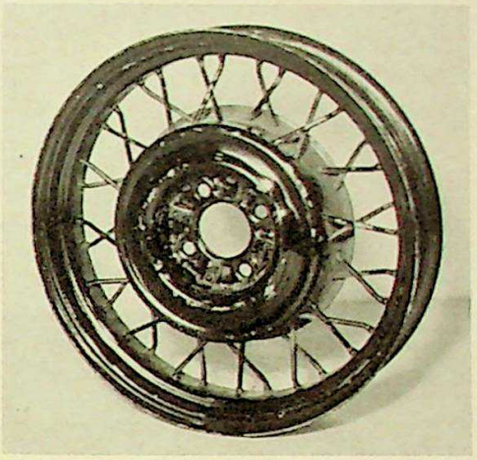
B.C. were merely refinements of the basic cross-section of a tree. This wheel was the strongest type known then, but its enormous weight canceled out some of its advantage. Later Egyptian wheels around 1300 B.C. used the spoke and rim method to overcome weight and yet retain some strength.

Returned To Discs

Improvements were made on this wheel such as increasing the number of spokes and reducing the diameter of the individual spoke. But in one form or another, the spoked wheel remained in use for the next 3400 years or so! The return to the disc wheel began in the 1920's although wooden spoked wheels were used on some cars up until the 1930's.

This long evolution from the first wheel, a wooden disc, to the modern wheel of the 1960's, a metal disc, took over 5,000 years.

The latest refinement of the metal disc wheel, the Electrofuse wheel, was developed by Motor Wheel Corporation in cooperation with a welding company. It promoted widespread use of the tubeless tire by producing a metal disc wheel that



This wire spoke wheel was used on the 1930 Hudson Terraplane, a name now vanished from the industry.

was completely airtight. The Electrofuse process introduces an electric charge eight places on the wheel to attach the disc to its rim. Virtually all automobile manufacturers use this process today.

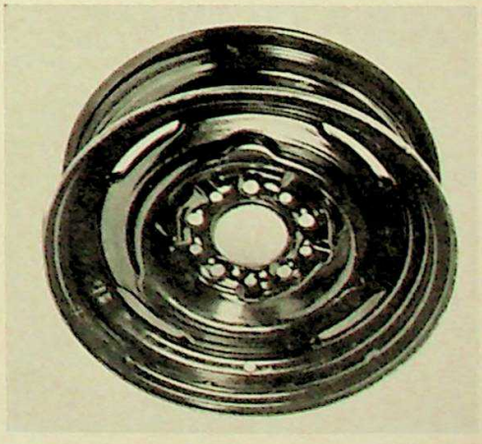
Low Pressure Tires

Modern history of the wheel began right after the turn of the century when, in the decade after 1909, wheel hubs and brake drums began to be made of steel. Prior to this, the conventional buggy wheel was made entirely of wood, excepting the use of metal for tires. The first demountable rims appeared in 1904 and by 1905 a universal rim had been developed. Wire wheels became standard equipment on all cars by 1913, as did demountable rims by 1915.

The first wheel developed for use with low pressure tires was manufactured by the Motor Wheel Corporation in 1921, and in the same year this company developed the first pressed steel wheel.

Disc wheels with demountable rims first appeared in 1927 as the trend to-

(Continued on Page 113)



Today's modern and much smaller wheel is exemplified by this wheel being used on the 1961 Plymouth models.

The Newport shown here is a two-door hardtop, one of five body styles in the newest Chrysler series. It is powered by a 265-horsepower engine which operates on regular grade gasoline. Wheelbase is 122 inches.

Shown here is the Chrysler New Yorker 4-door hardtop, powered by a 350-horsepower, 413 cubic-inch engine which delivered more than 20 miles per gallon in a recent economy run competition.

Chrysler Adds Newport Series In 1961

The Newport series—a new line of full-sized Chrysler cars in a lower price range—were introduced in dealerships on Oct. 6, along with the newly-styled 1961 Chrysler Windsor and New Yorker series models. The Chrysler 300G, America's most powerful car, will be announced at a later date.

The Newport is powered by a 265-horsepower Firebolt V-8 engine of 361 cubic inches and 9 to 1 compression ratio. Designed to operate on regular grade fuel, the Newport engine and automatic transmission in its first economy run marked up 21.7 miles per gallon. "The new Chrysler Newport brings true economy of operation into the full-sized luxury car field," said C. E. Briggs, general manager of the Chrysler and Imperial Division. "Regular fuel means an immediate savings of more than ten per cent over premium fuel."

Manual Floor Shift

A floor - shift, three - speed manual transmission is standard equipment in the Newport and Windsor series.

In addition to the new 265-horsepower Newport engine, Chrysler offers a 305-horsepower V-8 engine of 383-cubic-inch displacement and 10 to 1 compression ratio in the Windsor series models. Chrysler New Yorker models are powered by a 350-horsepower V-8 engine of 413 cubic-inch displacement and 10 to 1 compression ratio.

The new Chrysler models feature canted head lamps, a new ribbed roof for four-door hardtops, single-curvature windshields, and lower tail lamps. Alternators replace conventional direct current generators. Push - button windshield washers and a foot operated parking brake are other new features.

The 1961 Chrysler line comprises 15 different models in four series—the Newport, Windsor, New Yorker and 300G. The Newport and New Yorker series have five body styles: A 4-door sedan, 4-door hardtop, 2 - door hardtop, convertible coupe, and 4-door hardtop station wagon. The Windsor series has three body styles: A 4-door sedan, 4-door hardtop, and 2-door hardtop. The 300G will be offered in two-door hardtop and convertible body styles.

Wide Color Range

Twelve solid colors and 28 two-tone combinations are available. Thirty-three interior trim codes range from rich all-broadcloths in sedans to all-vinyl combinations in convertibles and station wagons.

A new electric push-button windshield washer sends four high-pressure jets of washer fluid against the windshield when the button is pressed.

The 1961 manual transmission on the Newport and Windsor, is a new, Chrysler-produced unit. It features a 2.55 to 1 low gear ratio, a 1.49 to 1 second gear, and 3.34 to 1 reverse gear. Gear changing is accomplished through a sports car type, floor-mounted shift lever.

Gets New J. & L. Sales Post

Lee B. Warstler, of Indianapolis, has been named assistant general sales manager of the Stainless and Strip Division of Jones & Laughlin Steel Corporation, it has been announced by John H. Abbott, vice - president of sales for the division. Warstler's head - quarters will be in Detroit.

L. E. WARSTLER

In his new position, Warstler will assist in the management of sales of mill products for division plants in Detroit; Canfield, Louisville and Youngstown, Ohio; Indianapolis; Kenilworth, N.J.; and Los Angeles.

Warstler, a native of Louisville, Ohio, joined J&L in 1946 and formerly was Indianapolis district sales manager. Before joining the company, he was associated with the Superior Sheet Steel Co. and Republic Steel Corp.

REDEEMS PREFERRED STOCK

Directors of the Wyandotte Chemicals Corporation, Wyandotte, have approved the negotiated purchase of all of its outstanding $100 par value, four per cent preferred stock. The entire amount of preferred has been privately held. The 124,568 outstanding shares will be purchased for a total of $11,086,552, with funds for their acquisition being provided from working capital and from a $7,500,000 bank loan.

BANK OPENS 11TH OFFICE

Michigan Bank has opened its 11th office at Ford and Telegraph roads in Dearborn township. Temporarily, it will occupy a mobile office until a permanent building can be erected. Bernard Moczar, formerly an asistant branch manager, has been named manager of the new office.

Cunningham-Limp Names Vice-Presidents

Promotion of three senior executives to vice-presidents of Cunningham - Limp Company, Detroit, nationwide designers, engineers and builders, was announced recently by M. E. Cunningham, president. The new officers are Edward Bergman, Harold C. Potter and G. Bretnell Williams.

G. B. WILLIAMS

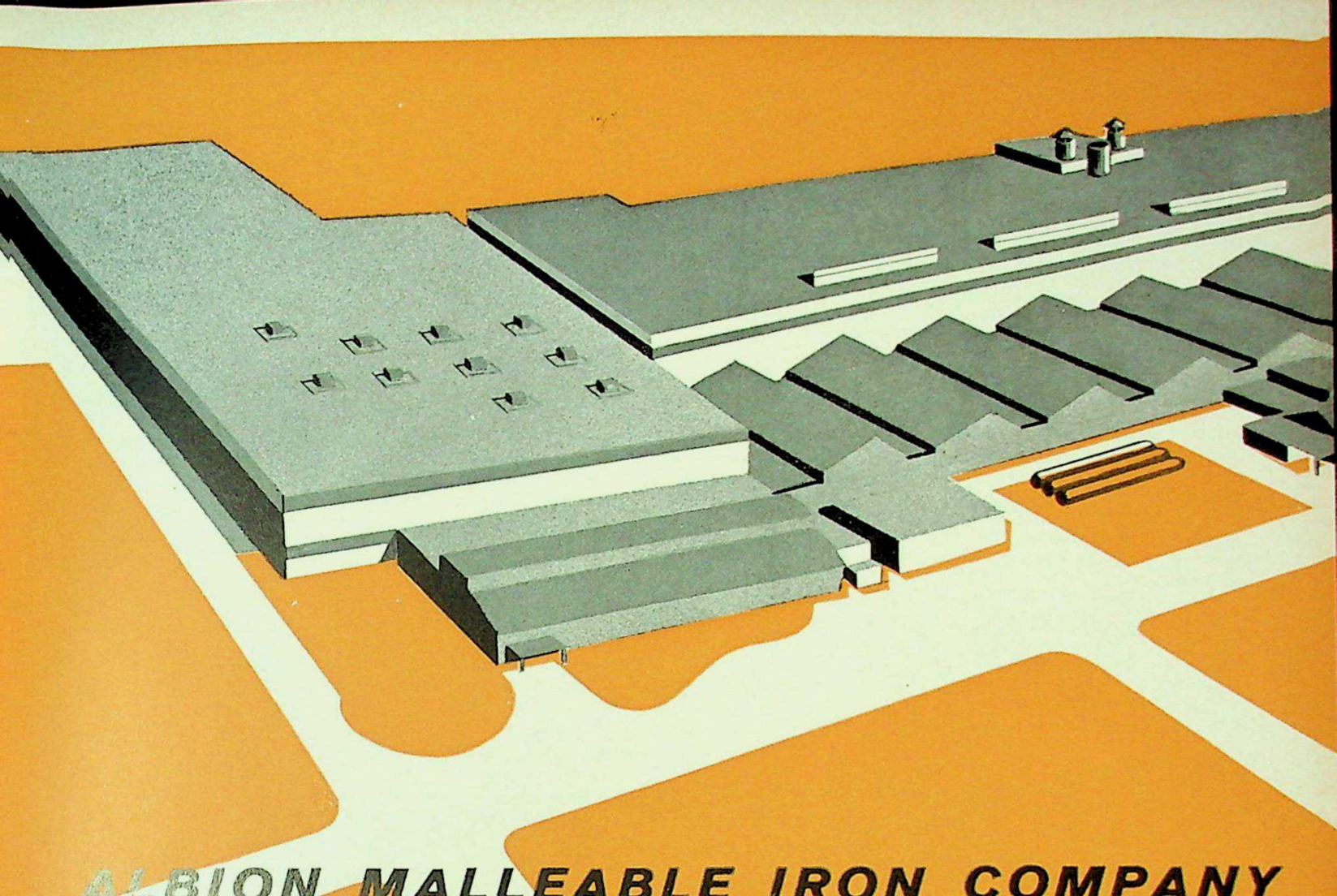
Bergman, who will be responsible for additional territory as well as increased personnel, has been manager of the company's Chicago Division since May, 1959. He joined the firm in 1946.

Potter, New York-based manager of the company's Eastern Division, has been a vice-president of Cunningham-Limp Limited since joining the firm in 1958. In his new responsibility, he will carry out further expansion plans in the New York office, as well as continue to be responsible for projects being developed in the seaboard states and eastern Canada.

Williams, whose responsibilities include administrative duties in the organization's Detroit headquarters offices, as well as complete charge of Cunningham-Limp's Financing and Leasing Service for clients, will additionally have jurisdiction over its advertising, sales promotion and public relations program. He joined the company in 1957 after several years as an industrial engineering executive for Chrysler Corporation.

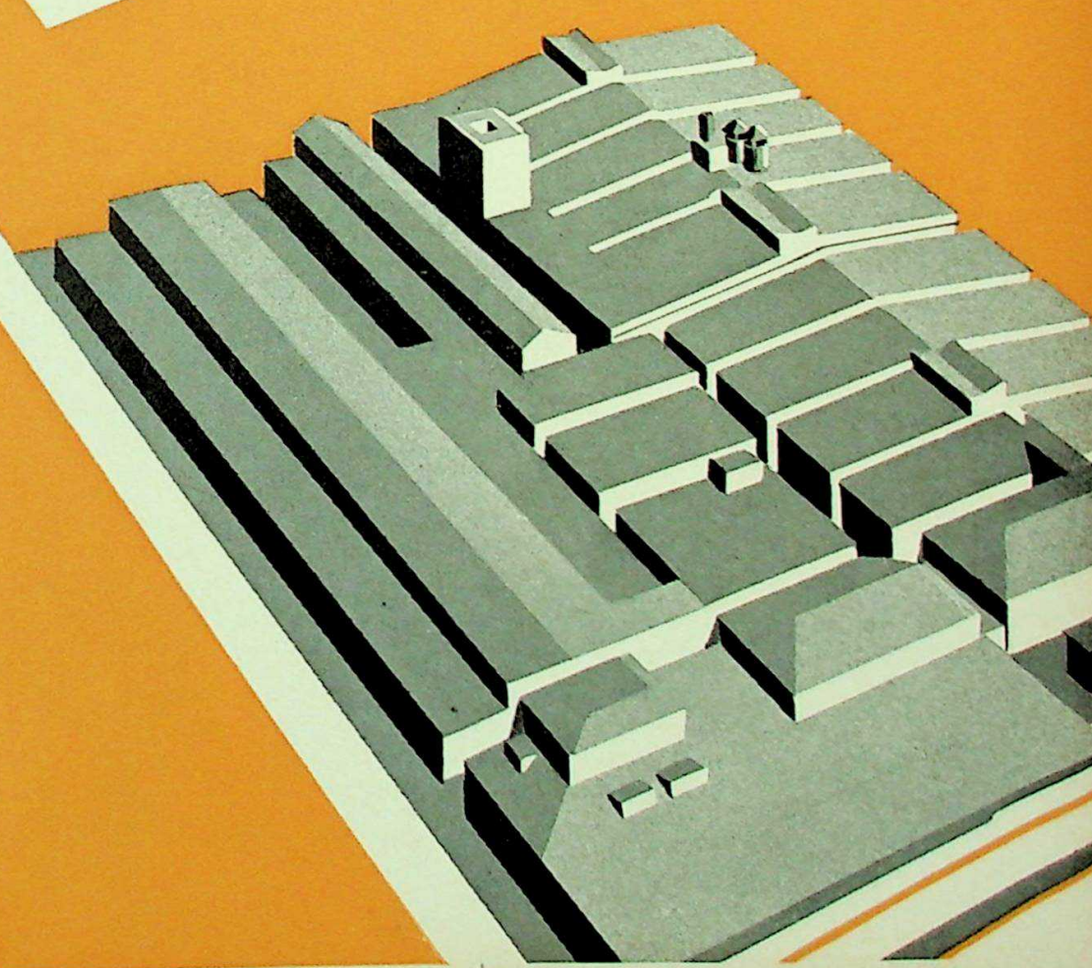
E. BERGMAN

H. C. POTTER



ALBION MALLEABLE IRON COMPANY

The Albion Malleable Iron Company, a Michigan corporation producing ferritic and pearlitic malleable iron and alloy castings at Albion, Michigan (above) and Muncie, Indiana (right), has supplied vehicle and related industries since 1888. On behalf of its automotive customers, Albion joins in the salute to Michigan's first National Automobile Show.



The 1961 Ford line of station wagons includes the nine-passenger Country Squire (shown here) and introduces a new model—a six-passenger version of the Country Squire.

This Ford Sunliner, like other 1961 Fords, is almost four inches shorter and two inches narrower than the 1960 model, yet it has the same interior dimensions as last year.

Two New Models Added To '61 Ford Line

New styling, new dimensions for greater maneuverability, and major engineering improvements such as 30,000-mile lubrication, feature the 1961 Ford line announced late in September by James O. Wright, Ford Motor vice-president and general manager of the Ford Division.

Improvement Listed

"The new Ford, nearly four inches shorter and two inches narrower than in 1960, offers a completely new appearance in the classic Ford tradition of straight-line design," Wright said. He listed the engineering and design improvements as follows:

- A new grease and lubrication system that extends the normal chassis lubrication interval to 30,000 miles.
- New, heavier brakes that adjust themselves.
- Specially processed underbody parts, including galvanized body panels below the doors that resist rust and corrosion.
- Aluminized mufflers that are double-wrapped for three time normal life.
- A 250 per cent increase in the thickness of anodizing on aluminum surfaces for brighter, longer-lasting grille, headlamp and tail lamp trim.

16 Models In Four Series

The new Ford line consists of 16 models in four series— Fairlane, Fairlane 500, Galaxie and station wagons. Added to the line are two new models—a Galaxie Club Victoria (two-door hardtop) and a six-passenger Country Squire station wagon.

All six station wagon models, from the two-door Ranch Wagon to the nine-pasenger, four-door Country Squire with simulated wood paneling, have a new roll-down rear window in the tailgate. The tailgate itself is seven inches wider than in 1960. A power-operated rear window is standard on the Country Squire models and the 9-passenger Country Sedan and optional on others.

Ford has introduced a new 390 cubic-inch Thunderbird Special V-8 engine, designed for effortless performance. The Thunderbird 352 Special and the Thunderbird 292 V-8's, as well as the Mileage Maker Six, all are designed to deliver greater economy on regular grade fuels.

Ford has improved all four transmissions—the manual, overdrive, two-speed Fordomatic and the dual-range Cruise-O-Matic. The latter transmission is equipped with a new vacuum control throttle valve linkage which provides smoother, more precise shifting than before, and eliminates periodic adjustment.

Large Round Taillights

The Classic Ford look features straight-line styling, front fenders browed above wide-spaced headlights, full-width aluminum grille, and the Galaxie roof-line. Small, canted blades top the sculptured rear quarter panels that terminate in large, round taillights that readily establish the new Ford's identity.

Among the features of the new cars are a wider trunk opening for easier loading and relocation of the spare tire on the "shelf" at the front of the trunk compartment to give more usable space; a foot-operated parking brake with the release knob located on the instrument panel; two-stage door checks; reduction of steering effort by 50 per cent with power steering and 10 per cent with manual steering; and a new, flexible coupling in the steering shaft that reduces transmission of road shock.

Swept-back windshield pillar eliminates the troublesome "dogleg", and foam-padded seats offer additional comfort.

Self-Adjusting Brakes

The extended lubrication interval is possible through use of new, tough plastic seals and liners plus a special grease having a molybdenum-disulfide base.

Ford brakes adjust automatically to compensate for lining wear. The self-adjusting mechanism is actuated when the brakes are applied while backing.

Ford Extends Warranty Period To 12,000 Miles

The warranty on all 1961 Ford Motor Company passenger cars is being extended to 12,000 miles or one full year, whichever comes first, it has been announced by Henry Ford II, president. "No other American automobile carries a warranty like this," he declared. The previous Ford warranty, traditional in the industry, was for 4,000 miles or three months.

The new Ford warranty will apply to all Ford lines—Ford, Falcon, Thunderbird, Mercury, Comet and Lincoln Continental.

Association Reveals Name Change

Automotive Tool & Die Manufacturers Association, which was founded in 1933, has been renamed the Detroit Tooling Association. It is made up of 160 well-known manufacturers of dies, jigs, fixtures, molds, gages, tools, special machinery and related products, as well as suppliers of die tryout, machining, experimental, and designing services.

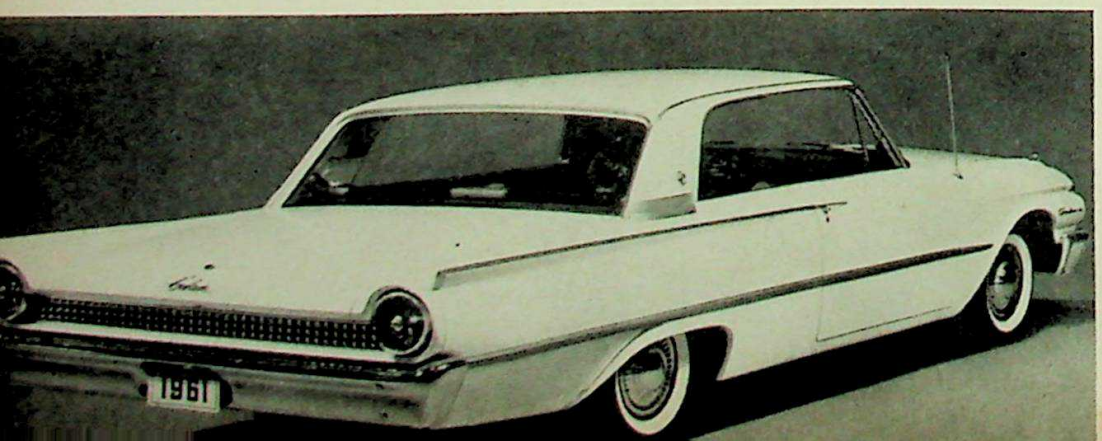
Detroit Tooling Association has been selected as the new name because all of the member companies are located within the Greater Detroit Area. Collectively, they form the "largest, tool, die, and special machine shop in the world."

EDISON DIVIDEND VOTED

Detroit Edison Company has declared a quarterly dividend of 50 cents a share on the common stock, payable Oct. 15 to shareholders of record on Sept. 29.

CONTINENTAL PAYS DIVIDEND

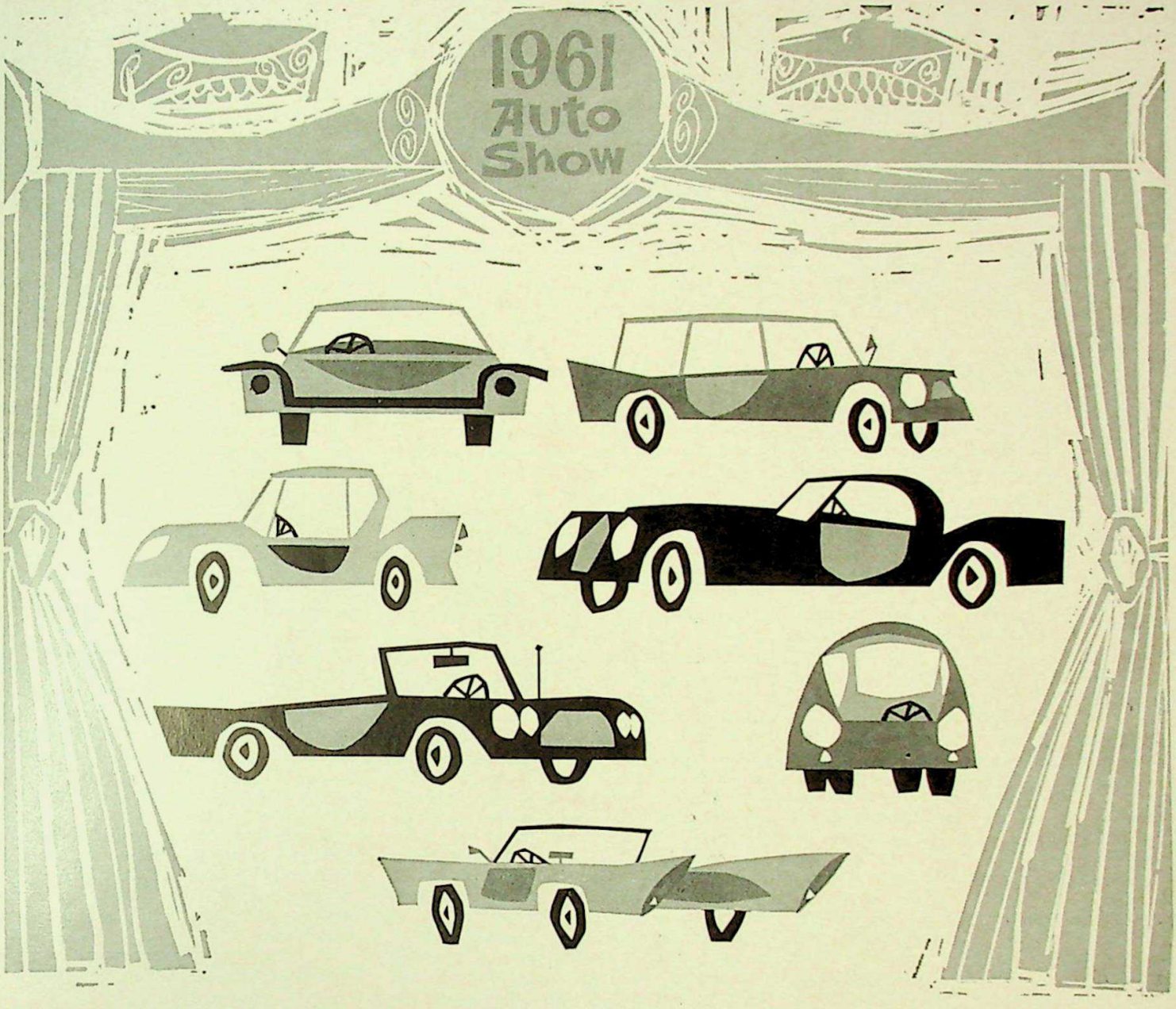
Continental Aviation and Engineering Corp., Detroit, has declared a dividend of 15 cents a share on the common stock, payable Oct. 21 to shareholders of record on Sept. 30.



★ ★ ★

The 1961 Ford Galaxie Club Victoria is one of two new models added to the Ford line. Like the other new Fords it is nearly four inches shorter and two inches narrower than in 1960. Featured is a 30,000-mile lubrication system. A new optional 390 cubic-inch high performance engine also is available.

★ ★ ★



PICK THE CAR YOU WANT TO OWN
COME TO US TO SWING THE LOAN

Cars to the left of you. Cars to the right of you. Long cars. Short cars. Red cars. Blue cars. You are in the fabulous world of wheels, a wonderland of all that's new . . . the 1961 Auto Show, in Detroit's beautiful new Cobo Hall. Just as sure as you will see a car for everybody and every budget, *one* will win your heart. That's when you should see us. Auto loans are a Detroit Bank & Trust specialty. We put them through fast . . . payments are convenient and you will like the low bank rates, too. You pick the car. Then stop in at any of our many offices, or tell your dealer you want to finance your new car at Detroit Bank & Trust.

DETROIT BANK & TRUST

59 CONVENIENT OFFICES MEMBER FDIC

The Oldsmobile Dynamic 88 Holiday Sedan for 1961, pictured here, features a newly designed roofline, one of eight different roofs available in Oldsmobile's full-sized cars. The Dynamic 88 is powered by a 250-horsepower 394 cubic-inch Rocket engine.

The 1961 Oldsmobile Super 88 station wagon is available in either a two or three-seat model. Cargo space is 85½ cubic feet, with a larger rear opening for easier loading and unloading. All Super 88 models are powered by a 325-horsepower Skyrocket engine.

18 Models In Three Oldsmobile Series

Eighteen models, incorporating major changes in styling and design, comprise the 1961 offerings of Oldsmobile in its three lines of conventional size cars—the Dynamic 88, Super 88 and 98—which made their public bow on Oct. 6.

"In addition to their new look, many design changes for passenger comfort have been made to make these cars more attractive than ever before," said J. F. Wolfram, Oldsmobile general manager and GM vice-president. "Head room is increased, the cars are much easier to get into and out of, and seating comfort is greatly improved."

Eight Roof Designs

Highlighting the styling motif, the sculptured side of the Dynamic 88, Super 88 and 98 sweep back from the distinctive front end, with the profile tapering at the rear—styling that is unmistakably Oldsmobile. Excluding convertibles, a total of eight different roof designs is featured on the various models within the three series.

"While the 1961 styling theme gives the cars a long, sleek look, overall length and width actually have been reduced so that they will fit in almost anyone's garage. Ample leg room has been maintained. Compared with 1960 the Classic 98, Super 88 and Dynamic 88 are from 3 to 5½ inches shorter overall. Exterior width is 3½ inches narrower, while the interior width remains the same with no sacrifice in roominess.

Elimination of the windshield pillar offset along with higher door openings greatly improves entrance room. The front floor is lower, providing more comfortable chair height seats. The front floor tunnel is reduced another 25 per cent, making it almost 50 per cent smaller than the 1959 tunnel.

Engine Improvements

Improvements in engine and transmission for 1961 have resulted in an even better balance between economy of operation and high performance. The 325-horsepower "Skyrocket" engine for the Super 88's and 98's has an improved induction system including a new camshaft design. Its compression ratio is increased to 10 to 1 to take full advantage of the premium fuels now available. The Skyrocket engine with 4-barrel carburetor and 394 cubic-inch displacement also is available on Dynamic 88 models at extra cost.

Displacement of the 250-horsepower Rocket engine—standard on the Dynamic 88—has been increased from 371 cubic inches to 394 cubic inches for additional performance. This engine uses a 2-barrel Econ-O-Way carburetor and operates on regular grade gasoline.

Engine quietness and durability have been further increased by lengthening the crankshaft front main bearing and bearing journal by ¼-inch to provide better crankshaft support.

An entirely new lightweight Hydra-Matic transmission is offered this year. The new unit, featuring Accel-O-Rotor action is 70 pounds lighter, and slimmer than the Hydra-Matic transmission used on 1960 models.

A completely new Guard-Beam frame design uses torque-box reinforcements to brace the four corners of the frame's central section, extending box section ruggedness both laterally and longitudinally. With this new frame design, passengers are cradled within the frame side rails.

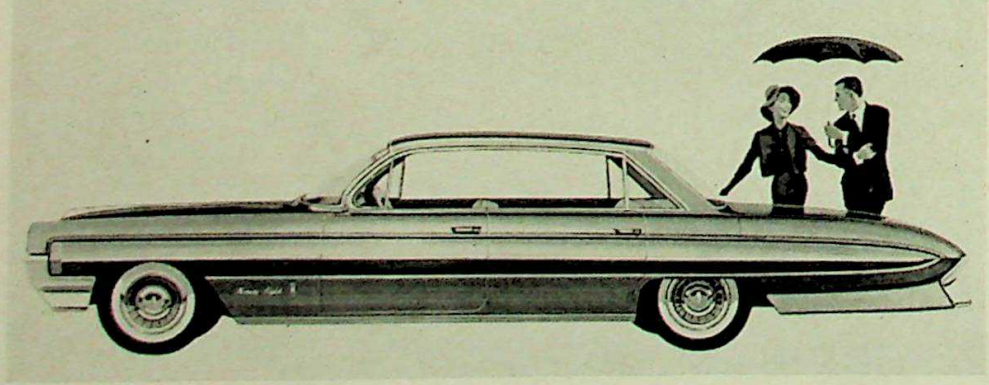
For the first time in 1961, Oldsmobile is introducing in its 98 series a six window, four-door hardtop sedan, designated as the Holiday Sedan. In addition, the 98 line offers a Holiday (two-door hardtop) coupe; convertible coupe; Sportsedan (four-window, four-door hardtop); and the Town sedan, a six-window (pillar) sedan.

15 Exterior Colors

Super 88 models for 1961 are the Holiday coupe; convertible; Holiday sedan (four-window, four-door hardtop); Celebrity sedan (four-door sedan); and two four-door Fiesta station wagons—either two or three-seat.

The Dynamic 88 is available in the same body styles as the Super 88 and, in addition, there is a two-door sedan.

Oldsmobile offers a full range of 15 new exterior colors, including nine metallic finishes.



The Holiday Sedan, a six-window, four-door hardtop, is a new addition to Oldsmobile's 1961 Classic 98 series. One of the 98's styling characteristics is the split, instead of solid, side molding.

Display Firm Advances Graham

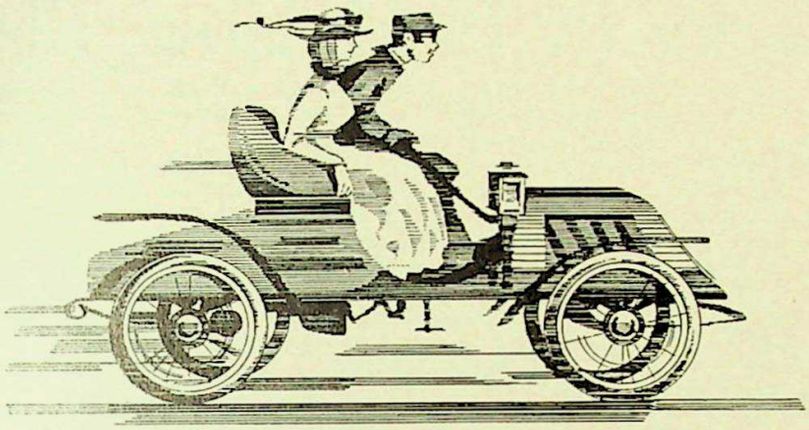
A. H. GRAHAM

Appointment of Arthur H. Graham as vice-president in charge of sales has been announced by Rudy Speerschneider, president of the Display & Exhibit Company, Detroit. Graham has served in an account executive capacity for the past seven years.

Display & Exhibit Company creates and produces exhibits, displays, animations, building decorations, and offers complete show and convention services. It is located at 1501 East Ferry avenue.

DETROIT IMPROVES AIRPORT

A master plan to improve the Detroit City Airport over the next ten years at the cost of $4,460,000 has been approved by the Detroit City Council. The plan is designed to permit the airport to accommodate about 225,000 landings and takeoffs a year. Present volume is about 175,000 such movements annually.



"don't worry, Bess . . . it's made of steel"

Since the early automobile shows, people have had confidence in their cars because they were made of steel.

Carbon and Stainless steels have helped to build millions of automobiles, keep them running longer and make them better looking every year.

There is really no other metal like Steel for automobiles.

Look for the **STEELMARK** on the products you buy.

McLOUTH STEEL CORPORATION

Detroit 17, Michigan

Decorative louvers in the upper rear quarter sections are a new styling feature of 1961 Studebaker Lark hardtops. With a complete line of body styles, there also are choices of two engines, three transmissions, various axle ratios and numerous options.

Beauty combined with utility is displayed by this Studebaker Lark 4-door station wagon with Regal styling. A 2-door station wagon also is offered, and both models are available with the new Skybolt six-cylinder engine or the 259 cubic-inch V-8 power plant.

17 Studebaker Larks In 1961 Line

Seventeen Studebaker Lark models—including a new Cruiser, a larger, luxury-styled four-door sedan—are offered for 1961, available with either the new, more powerful six-cylinder OHV engine —the Skybolt Six—or the V-8 power plant.

In announcing the 1961 Larks, Harold E. Churchill, president of Studebaker-Packard Corporation, said: "Within our product philosophy of consistency of design, our 1961 models incorporate substantial styling refinements and engineering advancements. These changes were made to improve performance and provide greater investment value."

Has Longer Look

Four-door sedans and four-door station wagons are offered with a choice of Deluxe or Regal styling in body and interior trims. Models with Regal trims are the two-door hardtop, two-door convertible, and the new Cruiser.

For the first time in the automobile industry, Studebaker offers padded instrument panels as standard on all models. Other standard equipment includes a newly-designed instrument panel with rheostat control of instrument lights; a new counter-balanced hood hinge; tray-type glove compartment with lock; electric two-speed windshield wipers; and directional lights.

Although the 1961 Larks look longer, not an inch has been added to the overall length. Meanwhile interior roominess has been increased. New streamlined styling is the secret. The roof, upper deck and rear deck have all been lowered one inch, and the cowl has been lowered two inches. With its softened body lines, the Lark's windshield and rear window have been enlarged for greater visibility.

New character has been given to exterior lines by sculpturing or configurations on the hood, rear deck lid and along the sides below the chrome strip trim. The chrome strip has been raised to a higher level with a more softened curve at the rear doors. Regal models have a new chrome body sill molding on the rocker panels.

The steel, chrome-coated radiator grille is three inches wider, has been set two inches lower, and is more recessed. Regal models are distinguished by a half-inch black border around the grille.

A new recirculating ball steering gear for all models offers lower steering effort, greater directional stability and improved recovery.

Offers New Luxury Model

The new six-cylinder 170-cubic-inch overhead valve power plant, called the Skybolt Six, develops 112 horsepower at 4,500 r.p.m., with a torque rating of 154 at 2,000 r.p.m. Compression ratio is 8.5 to 1.

Specifications for the Lark V-8 engine for 1961 remain unchanged. With standard two-barrel carburetion, the V-8 develops 180 horsepower at 4,500 r.p.m., with a torque rating of 260 at 2,800 r.p.m. Compression ratio is 8.8 to 1. With the use of dual exhausts and four-barrel carburetors, horsepower of the V-8 is boosted to 195.

With its all-new 112-horsepower overhead valve power plant, the Lark Six has special features to match its more powerful engine. A new automatic transmission and a new converter incorporate such features as a one-way clutch to provide smoother shifting characteristics. The clutch has been increased from 8 to 9⅛ inches. New linkless sway bars are standard equipment.

The Lark Cruiser is a larger, Regal-styled four-door sedan, powered by a V-8 engine. Its overall length is 179 inches, or four inches longer than the regular Lark sedans. Its wheelbase is 113 inches as compared with 108.5 inches on other Lark sedan models. Lark Cruisers are available with standard, overdrive or Flightomatic transmissions.

This is the Lark Cruiser, Studebaker's new large luxury-styled 4-door sedan for 1961. It has a 113-inch wheelbase and an overall length of 179 inches. The Cruiser is powered by a 259 cubic-inch V-8 engine, with 289 cubic-inch V-8 engine optional.

Named Agency Account Executive

Appointment of Edward J. Whetter to account executive in the commercial products group of MacManus, John & Adams, Inc., has been announced by Fred J. Hatch, senior vice - president. He will operate out of the Bloomfield Hills offices of the agency.

E. J. WHETTER

Whetter has been in the retail advertising field for the past 18 years. He was with Montgomery Ward Company for the past 11 years, most recently as advertising director for the Detroit region. Previously, he was with Crowley, Milner & Co., and with the Pennzoil Company.

ELECTED S-P VICE-PRESIDENT

A. J. Porta, executive vice-president and automotive division general manager for Studebaker-Packard Corp., has announced the appointment of Roy B. Bender as vice-president of the division. Bender joined S-P about 21 years ago as a district sales manager in Pittsburgh. In his new post, he will continue to serve as parts and service division manager.

DETROIT TODAY!

It is a modern city . . . a living tribute to the foresight of leaders in government, business and industry. We, who benefit by their vision, have honored only a few of them by naming expressways and some of our new public buildings in their memory. Cobo Hall is one of these monuments.

It is fitting that the dedication of this great building be held in conjunction with the National Automobile Show. It was for occasions of this kind that Cobo Hall was conceived.

On this occasion, we salute our city planners and the automobile industry for their contribution to DETROIT TODAY.

MNB MANUFACTURERS NATIONAL BANK
OF DETROIT

Shown here is the 1961 Plymouth Fury two-door hardtop, with its all new front end. Front fender sculpturing sweeps down over the head lamps to the center of the grille, and then reverses to meet the inner portion of the head lamps. The forward-thrusting aluminum grille extends above the head lamp eyebrows.

This rear three-quarter view of the 1961 Plymouth shows off its fresh, new styling to advantage. Gone are the familiar rear fins of former years. Note the concave design of the rear quarter panels which have a slight downward curve as they flow rearward from the body and the expansive sweep of the rear window.

Plymouth Drops Fins On 1961 Models

Presenting a marked change in exterior styling, featuring the elimination of rear fender fins, the 1961 line of 26 Plymouth models were placed on display in dealer showrooms on September 29. In 1961, Plymouth has made major engineering and styling gains in the areas of economical operation, trouble-free driving, luxury-car appearance and riding characteristics.

Viewed from the side in silhouette, the new appearance is most pronounced. Designers have reduced the mass of the rear of the car, added to the length of the hood, and used a minimum of side trim. Concave design of the rear quarter panels helps to achieve stability when driving in cross winds. They have a slight downward curve as they flow rearward from the body.

Bomb-Type Head Lamps

Front fender sculpturing sweeps down over the head lamps to the center of the grille, and then reverses to meet the inner portion of the head lamps. The aluminum grille is of a forward-thrusting design, and it extends above the head lamp eyebrows. The separate, bomb-type head lamps are slightly canted to complement the fender sculpturing. There is a new bumper, a new hood with a sculptured ridge along its center, and the Plymouth name in script along the left side, and new parking lamps.

In its 26 models, Plymouth for 1961 offers five engines, four different transmissions, and 14 body colors and 30 two-tone body color combinations.

In the Savoy line are two and four-door sedans with either 6-cylinder or V-8 engines; the Belvidere line has two and four-door sedans and a two-door hardtop, all with a choice of two engines; in the Fury line are a four-door sedan, a two-door hardtop, a four-door hardtop, all available as either a 6 or V-8, and the convertible, offered only as a V-8.

Nine Station Wagons

Nine different Suburban station wagons are offered: A two-door 6-passenger car and a four-door 6-passenger (6 or V-8) in the DeLuxe line; a four-door, 6-passenger (6 or V-8) and a four-door 9-passenger (V-8 only) in the Custom line, and a four-door, 6-passenger, and four-door 9-passenger (V-8 only) in the Sport Suburban line.

Some features of the new Plymouths are: An alternator to replace the old-type generator; an improved carburetor needle valve; a new distributor with a nylon rubbing block at the breaker points; improvements in the steering system; new quiet-cushioning action built into the shock absorbers; new longer-lasting tires that are squeal-resistant; unibody construction; a new magnetic drive in the speedometer; a new solenoid-shift starter; more durable and smoother brakes; a new parking brake; and inner construction of the seats that is stronger and provides extra cushioning to the center section of the rear seat.

The engine and horsepower line-up for the 1961 Plymouth is as follows: 30-D Economy Six, 145; Standard Fury V-800, 230; Super Fury V-800 (Powerpak), 260; Golden Commando High Performance, 305; and Sonoramic Commando, 330.

Carburetor Is Improved

The inclined 30-D Economy 6 engine has a new anti-percolation feature in the carburetor to insure quicker hot starts. Improved breathing for better performance has been provided on the 361-cubic inch Golden Commando V-8 by means of larger diameter intake valves to improve volumetric efficiency.

Plymouth is introducing two different manual transmissions and the Torque Flite 3-speed automatic and the Power Flite 2-speed automatic transmissions.

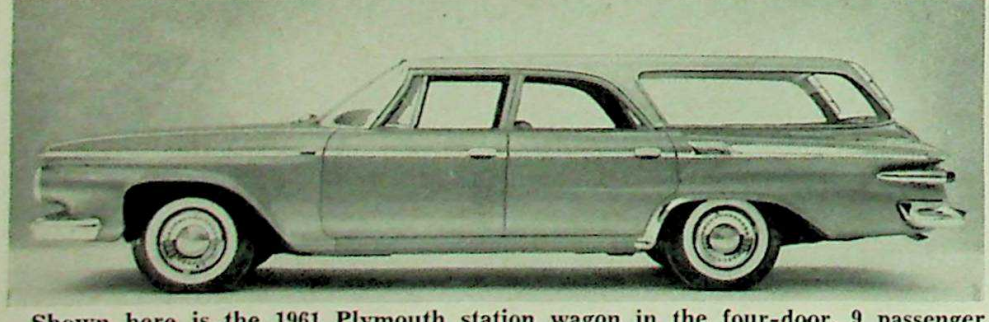
A new heavy-duty manual transmission is standard equipment on all 361 and 383 cubic-inch V-8's, all 318-cubic-inch V-8's with power pack, and all heavy-duty taxis. For the 318 cubic-inch Fury V-800 engine there is a new lightweight manual transmission. An improvement in the manual transmission for the 30-D Economy Six engine features an increase in the low-gear ratio from 2.50 to 2.71 to provide easier starting on steep grades and more lively break-away performance.

Less Effort In Steering

There are further improvements in both power and manual steering. A fabric reinforced rubber coupling between the steering gear and shaft on manual steering cars acts as a universal joint and provides quieter steering with less effort. On power steering cars equipped with 361 and 383 cubic-inch engines, a new mounting arrangement eliminates the need for adjusting the drive belt tension.

Interiors of the 1961 Plymouth emphasize softness, color and comfort. Completely new are the instrument panel, steering wheel, seat designs, door panels, and fabrics.

Wheelbase of the 1961 cars is 118 inches for the sedans and hardtops and 122 inches for the Suburbans. All models are 80 inches wide, with over-all length of the sedans and hardtops at 209.5 inches, and the Suburbans at 217.7 inches.



Shown here is the 1961 Plymouth station wagon in the four-door, 9 passenger Sport Suburban model, one of 26 models being offered by Plymouth for 1961.

ERECTS KALAMAZOO BUILDING

Burroughs Corporation has started construction of a modern office building to house its marketing headquarters for Kalamazoo and five surounding counties. The firm will move from its present quarters in the Harris Hotel, Kalamazoo, early in December to the new structure, to be located at Crosstown Parkway and Howard street.

STARTS $300,000 BUILDING

Construction has been started on a $300,000 office and warehouse building at Trumbull and Howard streets, in Detroit's West Side industrial redevelopment area, by Smith-Bisschop & Co. The building when completed next January, will be leased to Fife Electric Supply Co., wholesale electrical suppliers.

"Even Temper—Level Gauge—Uniform Finish—Alert Service—Manufacturing Costs Cut With *LPR Brite Wire Coils."

How **Strip** Users and **Brite Wire** Fabricators Rate **Detroit Steel** for **Source Security** and **Job Performance**

Job Stampings "Your strip is always consistent, level gauge, even tempered and uniform finish, which is essential not only to hold dimensions, but to maintain constant weight per piece."

Bearings "It's certainly a pleasure to do business with a company that gives us the kind of service that you do on cold rolled strip."

Auto Parts "You are on the top of our cold rolled strip list. Your percentage of participation will increase."

Springs "You pulled us out of a tight spot on your quick delivery of Oil Tempered Wire."

Concrete Pipe "We were pleasantly surprised at the quick handling of our recent pipe fabric order."

Cutlery "Your first LPR Wire coils far superior to anything we have ever received."

U-Bolts "Your first shipment of Brite Basic Wire is working better than any we have ever received in the past."

Bed Springs "Your first lot of Long Production Run *LPR Wire Coils running fine. Looks like the answer to help us cut manufacturing costs."

Tubing "We sure appreciate the help your contact service man gave us in working out a production problem."

Perhaps DSC Accutronic® STRIP SERVICE or Long Production Run *LPR Brite Wire Coils can be helpful to you, too. We'll gladly arrange a demonstration—no obligation. Just call your nearest DSC Customer "Rep" or write direct to Detroit Steel Corporation, Box 7508, Detroit 9, Michigan.

Steel

Performance Proved DSC®

DETROIT STEEL

Flat Rolled and Wire Products

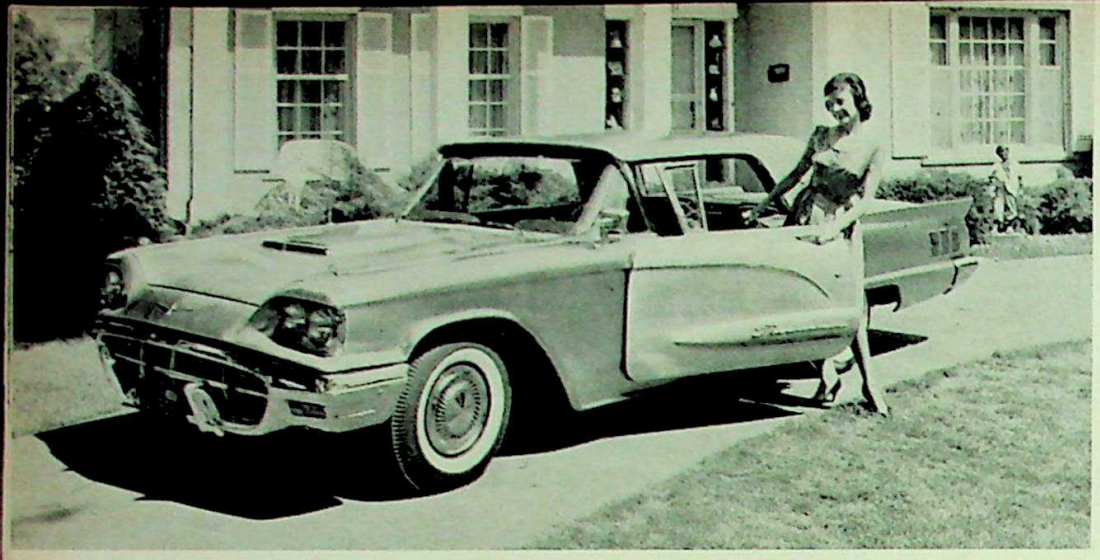
Detroit Steel Corporation—General Sales Office: Box 7508, Detroit 9, Michigan

COPYRIGHT DETROIT STEEL CORPORATION 1960

*A DSC TRADE-MARK

Customer Satisfaction—Our No. 1 Job

DETROIT DISTRICT CUSTOMER "REP" OFFICES
Dan H. Mathews, Manager
R. J. Herbenar, Assistant Manager
Detroit 28, 13900 Joy Road, TExas 4-9438
Grand Rapids 6, 1331 Lake Drive S.E., GLendale 6-9569
Toledo 13, Ohio, 2446 Sylvania Ave., GReenwood 9-1657



★ ★ ★

Not a new production model but a special all-stainless steel bodied automobile made for Allegheny Ludlum Steel Corporation as an experiment. The Budd Company fabricated the body from stainless steel supplied by Allegheny Ludlum. The body was stamped from standard Thunderbird body dies using the same gauge material in stainless as it would in mild steel.

★ ★ ★

Metallurgy Is Key To Development Of The Modern Automobile Of Today

METALLURGY is the key to development of the modern automobile . . . in the dominant iron and steel, in the swelling use of aluminum, magnesium, zinc, copper and other metals.

Iron and steel have made the automobile possible. From the beginning, they provided a widely available material, capable of being easily formed and treated. This provided the special properties necessary in a vehicle that runs 50,000 to 100,000 miles under the most trying conditions of rough handling and speed.

Improvements by the metallurgist have brought this progress for, within the memory of old timers, the blacksmith-wrought metal was so distrusted that the Brush car had a hickory axle, and the old Franklin had a wooden front axle and wooden side rails.

Alloy Steel A Factor

In fact, all wheels were made of wood until 1933-34 and auto bodies had a frame of wood until 1936-37.

There were only two different types of alloy steel used in automobiles in the early days. Now there are more than two score.

Some highlights in the trend were:

1908—C. Harold Wills pioneered and developed use of vanadium steel for Ford.

1921—Studebaker developed nickel-molybdenum steel for commercial use. Nickel plating appeared on radiators and lamps.

1923—Dodge offered all-steel enclosed bodies.

1925—Oldsmobile introduced chromium plating.

1926—Hudson offered an all-steel body.

7,000 Kinds of Steel

In a typical car of some 3,900 pounds, there are well over 100 separate and distinct varieties of steel—in many combinations of form, chemical composition, size and quality. These varieties are further modified into some 7,000 different kinds of steel in a car's 13,000 to 15,000 individual parts. Such a car requires some 3,800 pounds of steel during its manufacture—a third goes into scrap salvage—for a net of some 2,500 pounds per car.

Three basic stocks are used—forged, rolled and cast steel and iron.

Heats now are measured scientifically, instead of judging by color as the blacksmith did. Many ingredients have been added in alloys, and we've learned more about how to make steel to certain hardness and strength, so we can predict its performance.

Many Technological Advances

We've learned to cold roll steel to accurate gage and good surface. We've learned to make it faster, with sheet speeding through the mill at 50 m.p.h. And we can make it in sizes useful to the auto maker—there are four mills that can make sheets in 90-inch widths.

In cast products it's the same story. As we've learned to hold the chemical specifications, and in turn the quality, we can melt faster and for accurate production. For example, a precision casting of a crankshaft now requires machining only in the bearing area.

Then came shell molding, even cleaner and more accurate—a method by which Ford took many pounds off the engine.

Progress in grey iron casting has been very rapid in the past two years and technological advances indicate cast iron will compete with light metals much longer than was expected.

Many improvements in metals are hidden inside the engine, the transmission or the rear axle.

Develops Special Alloys

Special alloys have been developed to take care of the unusual or difficult requirements. Valve materials operate for thousands of miles at red heat. Spring materials withstand bumps in the road without breaking. Gear materials transmit heavy loads without failure for the life of the car.

Here are a few examples:

1914—Spiral bevel gear was developed by Packard engineers.

1926—Packard offered hypoid gears.

1930—Studebaker used helical gears in transmission. Pontiac developed tin-plated pistons and pressed steel housing.

1933—Valve inserts introduced.

1937—Coil springs in rear introduced.

In transmissions, too, new materials were needed:

1931—Oldsmobile adopted synchromesh transmission.

1938—Chrysler introduced fluid coupling for transmissions.

1939—Oldsmobile offered Hydra-matic drive.

1940—Cadillac made Hydra-matic available on all models. Fluid drive available on Dodge, De Soto and Chrysler cars.

1948—Buick features Dynaflow (hydraulic torque converter) transmissions.

Laugh At Scientists

The first metallurgical laboratories for the microscopic study and control of steel and its heat treatment, for General Motors Corporation, were put under way in 1911 by Carl Zimmerschied, later president of Chevrolet. Many of the men, later big in the industry, then laughed at the scientists for looking at steel through a glass. Microscope slides showing grain structure of the steel were joked about as showing the "picture of a cookie."

The old Cadillac four-cylinder car was the first General Motors automobile to use alloy steel, put into the transmission gears and pinions.

Contributing to production of more and better automobiles was the swing of the steel industry—since well before World War II—to the use of high-speed, continuous wide strip mills. They started a fascinating industrial revolution—the vast growth of light gage steel products.

Now sheet—some of it 98 inches wide—rolls at express train speed. Ingot becomes a ribbon of steel nearly a quarter of a mile long.

All-Steel Auto Top

One of the earliest applications was the all-steel auto top, coming into use some 25 years ago, which could be pressed from a single wide steel sheet. (The "turret top" was introduced in 1934 by Fisher Body.) About that time, too, auto makers were beginning to weld bodies. Knee action was attracting wide interest.

In any consideration of metals used in the American automobile in the past

(Continued on Page 56)

positively...no jr. editions!

For proof, see the new Newport, Chrysler's lowest priced beauty. Enter with ease and settle into a special driver's seat that snugs up shoulder high for full support. Enjoy roomy five-foot-wide seats. Relax inside Unibody, the single-unit body that's twice as strong as old-type body-frame designs. Quiet as a den. Unibody's sprayed with over 90 lbs. of sound deadener, padded with enough material to make a 10′ x 10′ rug. And you'll like Newport economy with a brand-new Firebolt V-8 that can cover over 500 miles on a tankful of regular gas. Road-test the Newport. Then check the price label.

CHRYSLER '61: NEWPORT ▪ WINDSOR ▪ NEW YORKER ▪ 300/G

Chrysler '61

featuring the NEWPORT
—a full-size Chrysler in a new lower price range!

Featuring an exclusive hinged side-loading ramp, the new Chevrolet Corvair Rampside pickup truck offers economical operation. Loading height is only 14 inches from the ground at the side opening and 26.5 inches at the rear gate. Payload rating is 1,900 pounds. It has a 95-inch wheelbase.

Designed for efficient low-cost delivery service, Chevrolet's Corvair 95 Corvan light-duty panel truck features wide access doors, rigid unit-frame construction, low load floor height, and large cargo area in relation to overall size. It is powered by a rear-mounted, 80-horsepower, air-cooled Corvair engine.

Light-Duty Trucks Added To Chevy Line

To meet a growing demand for lower cost, efficient transportation in the local delivery and service fields, Chevrolet has introduced the "Corvair 95"—a new series of short wheelbase, rear-powered, light-duty trucks to its 1961 line.

The new line is designed for maximum utility of cargo space and load capacity in relation to overall dimension and weight. With a 95-inch wheelbase and short overall length of less than 15 feet, it has a short turning radius and is highly maneuverable.

Three New Models

Comprising a panel delivery and two pickup models, the "Corvair 95" line incorporates innovations for easy loading and cargo accessibility. One of the pickup models has a unique, swing-down, side-loading ramp.

For economy of operation, the new series is powered by the 80-horsepower, air-cooled Corvair six-cylinder engine and transaxle power unit mounted at the rear. Other features are unit-frame construction for rigidity and light weight, independent coil spring suspension at all four wheels, and almost equal load weight distribution between front and rear wheels for excellent handling and ride.

The Corvan panel delivery is 70 inches wide with an overall height of 68.5 inches. Cargo space is 191 cubic feet with a payload rating of 1,800 pounds for a maximum gross vehicle weight of 4,600 pounds. The load area is accessible from the driver's seat and through double doors on the right hand side of the vehicle and at the rear.

The Loadside and Rampside pickup models are rated at 1,900 pounds payload, and feature a grain-tight box of 80 cubic feet capacity. Identical in length and width with the Corvan panel delivery, the pickup cabs are only 69 inches high. The pickup tailgate is 44.8 inches wide on both models while the ramp opening of the Rampside model is 47.5 inches.

Load floor height of the "Corvair 95" trucks at the side opening is less than 14 inches from the ground and rear door tailgate loading height is only 26.5 inches. Step height at the front doors is only 17 inches for easy entry and exit.

Cab location at the extreme front of the vehicle affords superior visibility as well as good maneuverability. Benefits from rear engine location are a full width, flat cab floor and exceptionally good traction when the vehicle is empty or only partially loaded.

The horizontally-opposed, 145 cubic-inch, 80-horsepower, six-cylinder, air-cooled engine runs on regular grade gasoline. Access doors are provided for normal service and maintenance of engine components. For major servicing, the complete power package, including engine, transaxle and rear suspension, may be removed as a unit.

Provides Flat Floor Area

A direct air heater, which utilizes engine heat to provide warm air for the passenger compartment, is available as either a factory-installed or dealer-installed option. A gasoline heater also is available for the "Corvair 95" trucks as either a factory or dealer installed option.

A removable, three-piece floor panel assembly is available for "Corvair 95" pickup model owners who require a flat floor area the entire length of the pickup box. Capacity of the box with the level floor in place is 37 cubic feet. On Rampside models, an additional storage compartment is provided beneath the auxiliary floor.

Michigan Bell Adds Two Vice-Presidents

Appointment of two new vice-presidents was announced recently by Michigan Bell Telephone Company. David K. Easlick, a former assistant vice-president, was named vice-president-personnel; and J. Hillman Zahn, former general commercial manager, western area, Bell of Pennsylvania, was named vice-president and comptroller.

Easlick, who became assistant vice-president - personnel in October, 1959, succeeds Thomas S. Nurnberger, who became vice-president and general manager for the Nebraska area of the Northwestern Bell Telephone Company on October 1. Zahn succeeds Henry M. Boettinger, who last August was made assistant vice-president of the American Telephone and Telegraph Company in New York.

Easlick, a graduate of the University of Michigan, joined the company in 1948. Two years later, he was appointed district traffic superintendent in Mt. Clemens, became district commercial superintendent in 1954, and a year later was appointed division traffic superintendent. In 1958, Easlick worked in a staff capacity in the business research and treasury department. As assistant vice-president, he headed up the labor relations group of the personnel department.

Zahn began his telephone career in 1945 with Bell of Pennsylvania in the company's accounting department.

D. K. EASLICK

J. H. ZAHN

Heads Dow's Saginaw Division

Louis N. Carmouche has been appointed general manager of the Saginaw Bay Division of Dow Chemical Company at Bay City, it has been announced by Macauley Whiting, Midland Division general manager. Carmouche, who has been manager of the Ludington Division since 1946, will be succeeded at Ludington by John W. Corey. Corey has been director of the research and development laboratory at Ludington and in charge of the Type B catalyst production there since 1958.

The Saginaw Bay Division includes the new Petrochemicals and Polyethylene plants and the Bay Refining Co., which Dow acquired in 1956. It is located on a 1,400-acre site near the mouth of the Saginaw River on the northern edge of Bay City.

ALL-DAY HOURS

. . . open until 4:30 p.m. every weekday, including Saturday.

SUPERIOR, COMPLETE BANK AND TRUST FACILITIES

. . . experienced personnel for personal or business financial counsel. Commercial and savings accounts for every banking need.

SAFE, SECURE DEPOSITS

. . . assets of over 500 million dollars. Deposits insured by the Federal Deposit Insurance Corporation up to $10,000.

EFFICIENT, ELECTRONIC BOOKKEEPING

. . . accurate, fast electronic bookkeeping methods provide better records.

TOP RETURNS FROM FULL-TIME INTEREST

. . . interest on savings is figured for **every day** your money is on deposit and compounded quarterly at the highest rate permitted by law.

STATE-WIDE FACILITIES

. . . offices located in: Battle Creek, Charlotte, Flint, Grand Rapids, Lansing, Marshall, Port Huron and Saginaw.

These assets add up to

"Better Banking Service"

for you at . . .

MICHIGAN NATIONAL BANK

ASSETS OVER 500 MILLION DOLLARS • • • MEMBER FEDERAL DEPOSIT INSURANCE CORPORATION

At your service until 4:30 P.M. Monday through Saturday

O5-P

The 1961 Rambler Classic features new front-end styling—hood, front fender and a new "lattice-work" aluminum grille. The compact 108-inch wheelbase Classics are available with the 127-horsepower aluminum six-cylinder engines, or the V-8 engines rated at 200 horsepower.

Rear end of the 1961 Rambler Classic showing the fine balance of line and form achieved with the new sculptured side styling. Other styling changes are noted in the hood lines, front fenders, and bumpers of one-piece design. The Classic again features single-unit construction.

Rambler Six Presents Aluminum Engine

Major engineering innovations, topped by the introduction of a new six-cylinder aluminum engine, highlight the 1961 line of Rambler Six and V-8 models announced early in October by American Motors Corporation. The new models, in the 108-inch wheelbase class, have been designated as the "Classic" series. They were placed on sale in dealer showrooms on Oct. 12.

The Rambler Classic Six features a new six-cylinder engine with a die-cast aluminum block, the first aluminum engine block produced in America for passenger car use by the die-cast method. The new engine weighs 80 pounds less than the comparable cast iron engine on the 1960 Rambler, and provides new ease of handling and steering.

Years Of Testing

"Production of the new aluminum-block engine was preceded by more than six years of American Motors' design experience with die-cast aluminum engines and the development of specialized production facilities costing more than $5,000,000," said Roy Abernethy, AM vice-president of automotive distribution and marketing.

"This advanced Rambler Six engine has undergone more than two million miles of actual driving tests on proving ground, highway and speed track, and has demonstrated its ruggedness, efficiency and durability. In addition, its up-front position permits maximum realization of the full benefits of lightweight engine design, such as better balance and weight distribution, greater stability, and easier handling."

The die-cast block is made of a special aluminum-silicon alloy for hardness and controlled temperature expansion. Centrifugally cast iron cylinder liners are chemically and mechanically bonded to the block.

Makes Styling Changes

Hydraulic valve lifters are used to assure quiet valve operation under all conditions. A newly designed oil pump eliminates the possibility of hydraulic lock and provides proper pressure calibration. A full-flow oil filter is supplied as standard equipment.

Horsepower of the Rambler Classic Six remains at 127; the Classic V-8 is rated at 200 horsepower. Power-pack options are available on both. Regular grade gasoline is recommended for all models.

Basic styling characteristics are maintained on the 1961 Ramblers, with the principal changes in the Classics noted in the grille, front fenders, hood, and new front and rear bumpers of one-piece design.

Elongated Side Spears

Headlights have been lowered and incorporated into the design of the "lattice-work" aluminum grille, which enhances the new hood lines. The hood blends into the front fenders, presenting a broader and more massive frontal appearance. Side sculpture begins with a slight crease on the rear door panels, becomes more emphasized as it progresses along the front fenders, curves inward over the dual headlights, and flows into the leading edge of the hood.

The sculptured lines are accented by elongated side spears which extend from the rear tail lights, stopping short of the headlights. The creaseline of the rear fender is carried forward through the door panels and over the top of the front fender.

Basic improvements in the 1961 Ramblers cited by Abernethy include:

- New ceramic-armored muffler and tailpipe as standard equipment, which provides a durable, corrosion-resistant exhaust system that virtually eliminates the costly problem of frequent replacement.

New Shock Absorbers

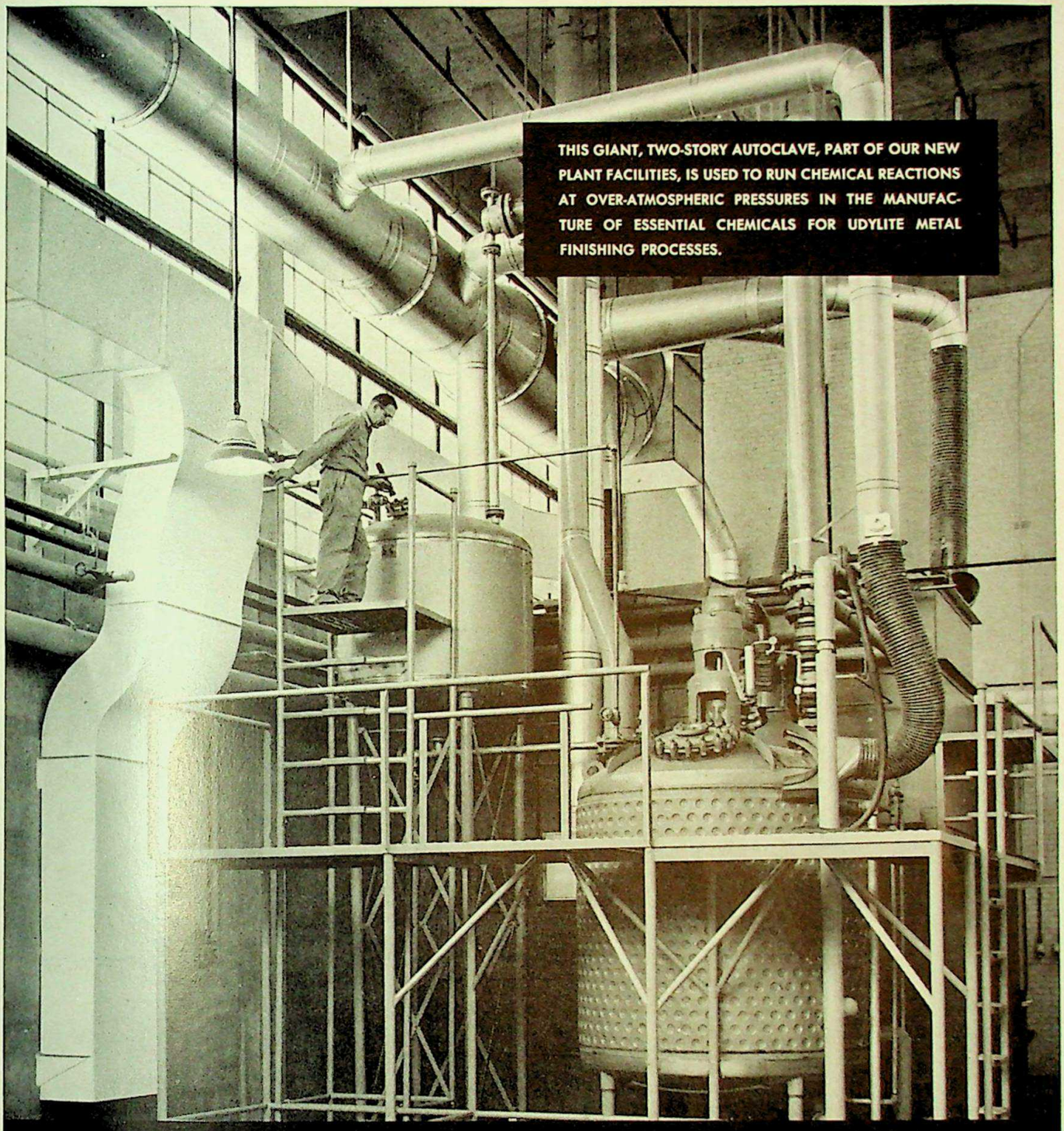
- A new heating and ventilating system that provides more efficient heating and more effective distribution of fresh air. Front seat cushions have been redesigned to permit better air circulation to the rear seat area.
- Molded cushion, acoustical fiber glass ceiling panels which have proven superior to conventional fabric types in the dampening of noise, retention of shape, and resistance to soil. The new ceiling material is fireproof and waterproof.
- Redesigned front shock absorbers incorporate a rebound hydraulic cut-off system for improved riding and less tendency to "bottom" from severe bumps.
- Four-way windshield washer nozzles provide a more efficient water-spray pattern.
- An all-new vacuum-powered 4-door locking system is offered as a factory-installed option. It is controlled by a switch on the instrument panel.
- A redesigned hood utilizes inner and outer panels for greater strength and rigidity.
- For cars with manual shift transmissions, smoother shifting is provided by improved gear lubrication and new grease fittings on the steering column.

14 New Models Offered

Eight 4-door models are included in the Rambler Classic Six line and six in the Rambler Classic V-8 line. They include sedans, two-seat station wagons, and three-seat station wagons.

Fifteen baked enamel colors, including nine new colors, are available for 1961 models. Twenty-six two-tone combinations also are available.

A restyled grille and new hood lines distinguish the 1961 Rambler Classic station wagons, available in both three-seat and two-seat models. Engines in the Classic series include the new lightweight aluminum six-cylinder engine rated at 127-horsepower, and the V-8 engine developing 200-horsepower.



THIS GIANT, TWO-STORY AUTOCLAVE, PART OF OUR NEW PLANT FACILITIES, IS USED TO RUN CHEMICAL REACTIONS AT OVER-ATMOSPHERIC PRESSURES IN THE MANUFACTURE OF ESSENTIAL CHEMICALS FOR UDYLITE METAL FINISHING PROCESSES.

$600,000.00
Invested in your future:

It cost that much to complete additional new plant facilities at Udylite in order to guarantee you: 1—absolute purity of product, 2—stringent quality controls, 3—reasonable price schedules. Now you can *depend* on these benefits from Udylite for years ahead, as our industry expands.

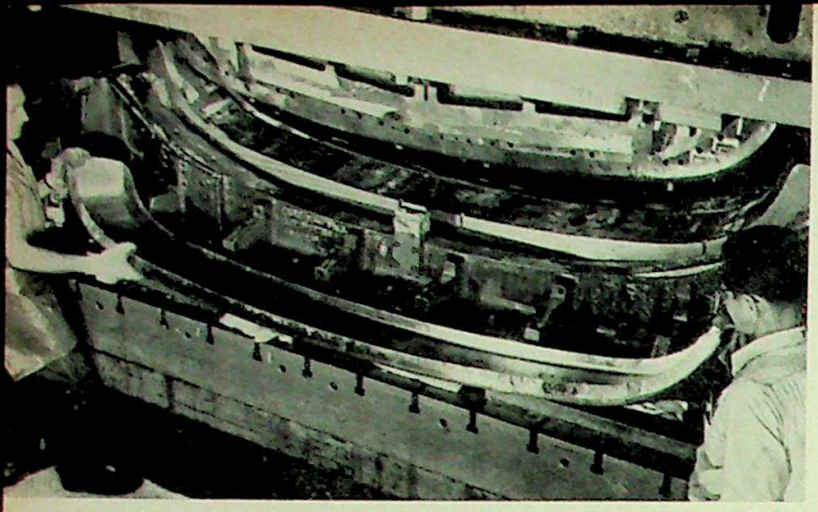
the udylite

corporation

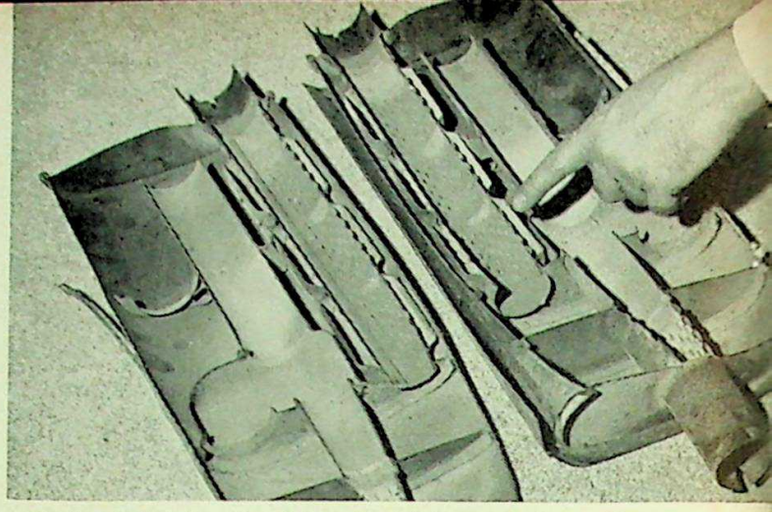
Detroit 11, Michigan

on the west coast:

the L. H. Butcher Company



Shown here is a stainless-clad bumper for a modern motor bus. It is pierced and drawn with a single stroke on this 1,000-ton press.



Perforated tubes in this all-stainless steel muffler were found to be completely clear after the car on which it was used had traveled over 30,000 miles.

Steel Industry Meets Competition

(Continued from Page 50)

five decades, the recent incursion of the light metals, particularly aluminum, is a familiar topic.

These trends will be treated more fully later, but a fitting endpiece to this roundup on steel is provided in counter-attacks by the steel industry to retain its dominance. Stainless steel is one of many "weapons" in their arsenal. Steel men are turning out a host of new steels possessing some advantages of rival materials, or stressing steel's unique merits.

Bumpers are an example in the talk of light metal takeover. Kaiser Aluminum & Chemical Corp. announced a few months ago it had developed aluminum alloys that should fill the bill at a price competitive with steel.

This was countered by word from Allegheny-Ludlum it had developed a bumper of carbon steel clad on the outside with stainless which, it claimed, would offer more rust resistance than any type of bumper in use, and that they were under current test on some compacts.

So as new fabricating methods wipe out the price advantage of one competitive material, the latter turns and fights to meet it.

In mid-May, the president of Big Steel's American Bridge Division told an Engineering Society of Detroit membership meeting that "steel used with imagination and design will make a car lighter, more efficient, less costly than Brand X (aluminum)."

He reported the automobile companies are testing differentially coated galvanized sheet steel, for which better corrosion resistance is claimed.

Special-Coated Steels

Donald D. Evans, of Armco Steel Corporation's marketing division, points to the definite trend toward the use of special coated steels in automotive manufacture. Zinc-coated steel sheets are being used in structural body components in certain compact cars. They have been found highly corrosion resistant. Another advantage of zinc-coated steel is its greatly improved weldability, needed for high speed production, and its excellent paintability.

Another development in special coated steels, he notes, is the aluminum coated sheet which is used widely in muffler construction. Highly resistant to heat and corrosion, it has prolonged muffler life two to three times.

Look At The Future

And last June, leaders of Detroit's steel industry met on a panel sponsored by the American Metal Market and took a look at the future. Interest of the automotive industry centered on a report that the stainless steel market would double within the next ten years. A spokesman for Jones & Laughlin's Stainless Steel and Strip Division's plant in Warren—which produces one-sixth of all stainless steel in the country, much of it for auto makers—indicated they were working toward a number of new uses for stainless. Among them was the stainless steel muffler. If this was adopted it would increase stainless steel automotive usage by 40 per cent, he said.

So it sums up this way. Steel's 85 per cent of a car's weight is its strength and its weakness, competitively speaking. From all indications, it will long continue to be the principal structural metal in autos. But the light metal producers have been nibbling away at the market for years, and forecast an accelerated pace of such incursions. So let's look at aluminum.

(Aluminum on Page 66)

Ault Heads Budd's Automotive Division

When Thomas J. Ault became president of the Automotive Division of the Budd Company in Detroit on Sept. 12, he returned to the automotive parts industry where he began his career a quarter - century ago. He had been absent for only two years, during which time he served as president and director of Saco-Lowell Shops, of Boston, and its subsidiaries, directing a major reorganization of that 147-year-old manufacturer of textile machinery.

T. J. AULT

Ault, in the overhaul of Saco-Lowell, moved all of its textile manufacturing machinery, previously housed in multi-story structures in Maine, Massachusetts and Rhode Island, to modern facilites in North and South Carolina. Some of the New England buildings were 100 years old.

Nearer the supply of cotton and many of the users of textile machinery, Ault spotted the new plants northward from Greenville, S.C., to Sanford, N.C. In line with the divisionalization-diversification of the Saco-Lowell production pattern, he created textile, automotive and electronics divisions of the company, completely remodeling the Saco (Maine) plant to house most of the non-textile operations—automotive, agricultural and defense products. He also established a research and development laboratory in cooperation with Clemson College at Clemson, S.C.

As a result of the changes initiated under Ault's management, Saco-Lowell returned to a profit position for the first time in four years during the last three quarters of his tenure with the company, and his policies are continuing that profitable trend.

Prior to joining Saco-Lowell in July, 1958, Ault was president of the Long Manufacturing Division of Borg-Warner Corp., Detroit, and its Canadian affiliate, Long Manufacturing Company Limited at Oakville, Ont. Earlier he headed Borg-Warner's Detroit Gear Division, long-time supplier of transmissions. This operation later was consolidated with Long Manufacturing Division. During his 23 years with Borg-Warner, Ault also served in various capacities at Warner Gear Division, Muncie, Ind.

Soon after his election as president and general manager of Long Manufacturing, Ault inaugurated a complete plant renovation and modernization program to update its manufacturing and administrative facilities. The Canadian company also built a modern plant at Oakville and moved its old factory at Windsor, Ont.

Born at Portland, Ind., Ault was educated in California, receiving a degree in business administration from the University of California at Los Angeles.

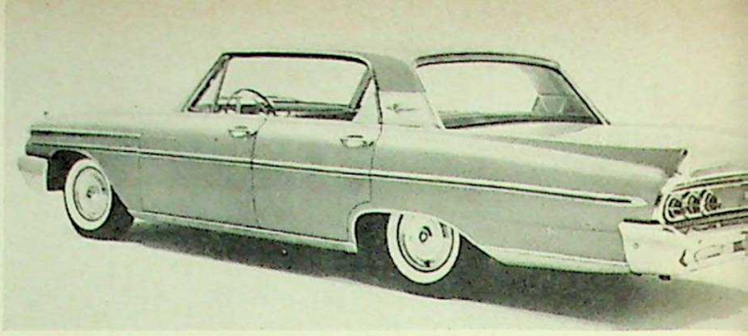
Donald L. Eppelheimer, Berrien county farm agent, now is vice-president of the First National Bank of Niles.

The National Automobile Show, that's what! All the exciting 1961 models—many of them made with materials from the Great Lakes family of automotive steels. You can get a good look at them in Detroit's brand-new Cobo Hall, October 15-23.

GREAT LAKES STEEL
Detroit 29, Michigan

Great Lakes Steel is a division of **NATIONAL STEEL CORPORATION**

Pictured here is the Meteor 600, four-door sedan, one of two new series introduced by Mercury for 1961 that are priced squarely in competition with the low-price field.



This is Mercury's Monterey four-door hardtop. Also available in the Monterey series are a two-door hardtop, four-door sedan and a convertible. Wheelbase is 120 inches.

New Mercurys In Low-Price Competition

Mercury for 1961 substantially increases its coverage of the low-price field by introducing two all new lines—the Meteor 600 and the Meteor 800, it was revealed early in October by Ben D. Mills, Ford Motor vice-president and general manager of the Lincoln-Mercury Division.

"We have completely restyled and engineered our products to compete in the low-price volume market," Mills stated. "We have shortened our cars by 4½ inches and made them 1½ inches narrower, yet we have retained interior comfort, riding qualities and luxury styling."

14 Models In Line

The Mercury line for 1961, which consists of 14 models, is identified as the Meteor 600 series, which is priced with the middle series in the low price field; the Meteor 800 series, priced with the top series of the low-price field; and the Monterey series, at the top of the line. In addition, there are four Commuter and Colony Park station wagons.

For the first time in its history, Mercury will include a six-cylinder engine. With a displacement of 223 cubic-inches, it develops 135 horsepower at 4,000 r.p.m. Compression ratio is 8.4 to 1. Also available are a V-8, 292 cubic-inch, 175-horsepower engine with compression ratio of 8.8 to 1; a V-8, 352 cubic-inch, 220-horsepower engine with compression ratio of 8.9 to 1; and a V-8, 390 cubic inch, (4-barrel carburetor) 300-horsepower engine with a compression ratio of 9.6 to 1. All but the latter use regular grade gasoline.

Mercury's front end for 1961 features a sturdy grille with dual headlights which give the appearance of being suspended in the grille. Styling of the rear quarter panel presents a tubular sheet metal section which contributes to the car's straight lines.

New Suspension System

Two different roof styles are used for sedan models. The Meteor 600 has a sloping rear glass. All other Mercury sedans and hardtops have a formal type roof with flat rear glass. Both roof designs in corporate a wrap-around windshield that eliminates the dogleg protrusion into the front door opening, allowing more entrance room.

Mercury chassis engineers have developed a new type of suspension system that gives an unusually smooth ride. The new system, called "cushion-link," incorporates an entirely new mechanical linkage in both front and rear suspensions. Road bumps and vibrations are absorbed more completely because the wheels are allowed to move slightly rearward as well as upward. The suspension is on all Meteor 800, Monterey and station wagon models.

The 1961 Mercury requires no chassis grease job for up to 30,000 miles which, in many cases, is longer than the original owner drives the car. The chassis fittings are prelubricated at the factory with a new lubrication that contains molybdenum-disulfide.

Four Transmission Choices

Additional passenger comfort is provided by extensive use of sound-proofing materials throughout the entire body to block noise and vibration at the source. Butyl rubber is used extensively where the body is mounted to to the chassis to absorb road shock and noise.

Four available transmissions are teamed with axle ratios which provide performance that can be tailor-made for all driving needs and desires. Transmissions are Merc-O-Matic, dual range Merc-O-Matic, and three-speed manual with and without overdrive.

A rust-resistant exhaust system features an aluminized double wrapped muffler for long life and quieter operation. Laminated exhaust inlet pipe also reduces noise.

Roadablity is improved with front wheels one-inch wider apart.

The lowest priced Meteor 600 series consists of a two-door and a four-door sedan; the Meteor 800 has a two-door and four-door model in both sedans and hardtops; the Monterey offers a two-door and four-door hardtop, a four-door sedan and a convertible. All station wagons are four-door models, with both six and nine-passenger wagons in each of the Commuter and Colony Park series.

Manufacturers Bank Promotes Three

Robert K. Anderson has been appointed a vice-president of the commercial banking department at Manufacturers National Bank of Detroit, it has been announced by William A. Mayberry, chairman of the board, and Arthur J. Fushman, president.

Named to succeed Anderson as the credit manager is Norbert A. Sylvester, formerly assistant credit manager. Thaddeus J. Winiarski fills the post vacated by Sylvester.

Anderson started with Manufacturers in 1948 as a credit analyst. A graduate of the University of Michigan, he is a director of Robert Morris Associates and a member of the Detroit Association of Credit Men.

Sylvester joined the bank in 1952 and has been assistant credit manager since 1956. He also is a member of the Detroit Association of Credit Men and the Robert Morris Associates, and serves on the membership committee of the Economic Club of Detroit.

Winiarski has been with the bank since 1952. A graduate of Wayne State University, he currently is attending law school there. His memberships also include the same two associations.

R. K. ANDERSON

N. A. SYLVESTER

Bank Buys Downtown Building

Manufacturers National Bank of Detroit has purchased a nine-story building located at 607 Shelby street, across Shelby street from the bank's main office. The property was purchased from Auto-Owners Insurance Company, with the sale negotiated by H. P. Holmes, Inc.

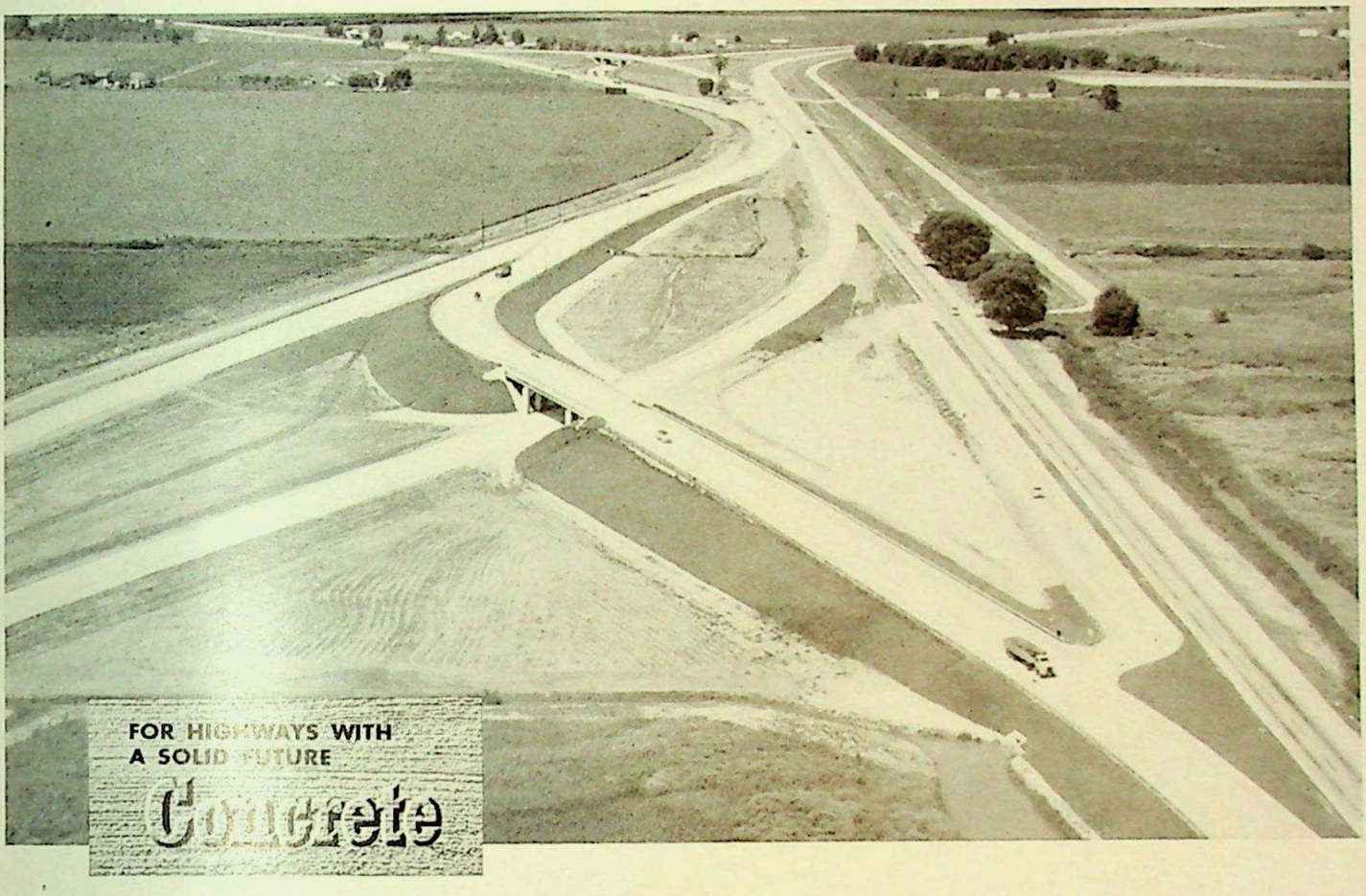
William A. Mayberry, chairman of the bank's board of directors, said the building was acquired to provide larger facilities for the bank's Trust Department.

Bank officials said that the building is in excellent condition and that remodeling will be limited to the first five floors, which will be redesigned to meet the specialized requirements of the Trust Department. The building houses, among other offices, the headquarters of the United Foundation, which will move into its new home on Woodward avenue in November.

Nylon Extruders, Inc., Detroit, has moved from 3431 Michigan avenue to 6240 North Telegraph road in Dearborn.

No pavement could be stronger even if carved from solid rock!

Concrete interchange between US-24A and Detroit-Toledo Expressway.



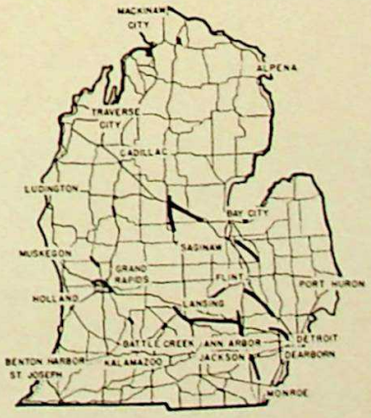
Where Michigan motorists demand the best... CONCRETE HIGHWAYS ARE FIRST CHOICE!

Major modern highways must be constructed for utmost safety and year-around dependability . . . plus economy! That's why concrete is chosen for the most important heavy-duty expressways in Michigan.

Wherever you see road crews building new concrete highways, you can be sure that engineers specified quality construction. Like most motorists, engineers know concrete highways provide a smoother, safer ride. They know, too, that concrete's exceptional durability plus its low first cost, guarantees long-range economy in tax dollars.

Thanks to improved construction techniques, today's concrete highways are better than ever . . . the modern answer to America's increasing traffic volume.

That's why, wherever Michigan motorists demand the best, concrete is *first choice* for the Class A highways this state needs for its growing economy!



New concrete expressways scheduled to be started in 1960! These are heavy-duty trunklines. Engineers picked concrete because of its superior durability, safety, low-cost record. Is your area getting a 1st Class highway?

PORTLAND CEMENT ASSOCIATION
2108 Michigan National Tower, Lansing 8, Michigan
A national organization to improve and extend the uses of concrete

The compact Valiant V-200 Suburban is shown here. It is a four-door, two-seat vehicle. The four-door, three-seat Suburban, which was available last year as a V-200, has been dropped from the line.

One of the two new models added to the Valiant line in 1961 is this V-200 two-door hardtop. Also new is a two-door sedan, available only in the V-100 lower priced series for 1961. Eight different colors are offered.

Valiant Adds Two Body Styles In 1961

With the addition to its line in 1961 of a new low-price two-door sedan and a two-door hardtop, Valiant now has complete representation in the sedan-hardtop-station wagon model group, which comprises 95 per cent of all cars bought from American manufacturers.

Addition of the new models makes Valiant "a full member of the Plymouth team and provides traditional high-quality Chrysler engineering and manufacturing standards on a broad front in the compact car field," said Harry E. Chesebrough, general manager of the Plymouth-De Soto-Valiant Division and vice-president of Chrysler Corporation. The Plymouth name in script now appears at the lower right edge of the deck lid or tail gate.

Six Models For 1961

The 1961 Valiant is offered in both the V-100 and V-200 series, and there is a total of six models. The four-door sedan and the four-door, two-seat Suburban are available in either series. The two-door sedan is offered only as a V-100, and the two-door hardtop is available only as a V-200.

The four-door, three-seat Suburban, which was available last year as a V-200, has been dropped from the line. Instead, as a dealer-installed option, a third-seat package is available for buyers who require more seating space. For greater passenger comfort, the seat back of Suburban rear seats has been widened by 4¼ inches.

In external appearance the new Valiant, which appeared in dealer Plymouth-Valiant dealer showrooms on Sept. 29, continues to accent the beauty of line and proportion which won it wide acclaim when it first appeared last year. Improvements have been made in 1961 for operating economy, durability, performance and smoothness of ride.

Most noticeable change from the front is the new grille. Although it retains its characteristic shape, it is bolder and has a more open appearance from a chrome-over-black background treatment. A new grille medallion carries the Valiant triangle in blue and red against a white field textured with fine horizontal lines.

Along the sides, the bright trim is designed to highlight the car's sculptured body. Windshields and rear windows have finished moldings of bright metallized plastic. The Valiant name in chrome-finished script appears behind the front wheel opening. Wheel covers are optional.

Eight Different Colors

The V-200 series (the top of the line) has side moldings which distinguish its models from those in the V-100 series. A slim molding carries the length of the front fender and door scupturing and includes a distinctive black and white medallion. A lower body side molding carries back into the rear fender, again highlighting the body sculpturing. A stainless steel drip rail molding is standard on the V-200 series, while the door upper molding and the rear quarter window molding are optional.

There are three new accent moldings along the inner curves of the rear quarter panels. On sedans and hardtops, the sculptured wheel on the deck lid is outlined by a bright molding.

The 1961 Valiants are offered in eight different colors, six of which are new.

All Valiant models are powered by a six-cylinder, overhead valve engine with a displacement of 170 inches. Inclined 30 degrees from the vertical to permit use of a unique manifold for maximum fuel economy, the Valiant has a horsepower rating of 101. This year the compression ratio has been reduced from 8.5 to 8.2 enabling the engine to handle non-premium fuel in a more efficient manner.

Offers Air-Conditioning Unit

Cars equipped with factory undercoating have a new silencing pad of high quality fiber glass to prevent engine noise from reaching the passenger compartment. The Oriflow shock absorbers have been redesigned for quieter operation.

The manual transmission shift linkage has been improved to provide a more positive feel of the shift pattern, and the gear shift lever has been made longer and higher for convenience.

Valiant offers air conditioning for 1961 as a dealer-installed option. It is a recirculating-type unit, designed to combine maximum cooling capacity with minimum space requirements at low cost.

The 1961 heating and ventilating system has been refined for better control of air distribution.

NEW WHITE TRUCK ENGINE

The White Motor Company has announced it will introduce a new six-cylinder truck engine, the White Silver Saver, designed for multi-stop delivery trucks. The engines offer a new feature, separation of intake and exhaust manifolds to opposite sides of the engine.

APPOINTS DETROIT AGENCY

Steel City Testing Machines, Inc., Detroit, has appointed Dudgeon Taylor & Bruske, Inc., Detroit industrial advertising and public relations agency, to handle its account. The Detroit firm makes machines for testing the physical properties of metals.

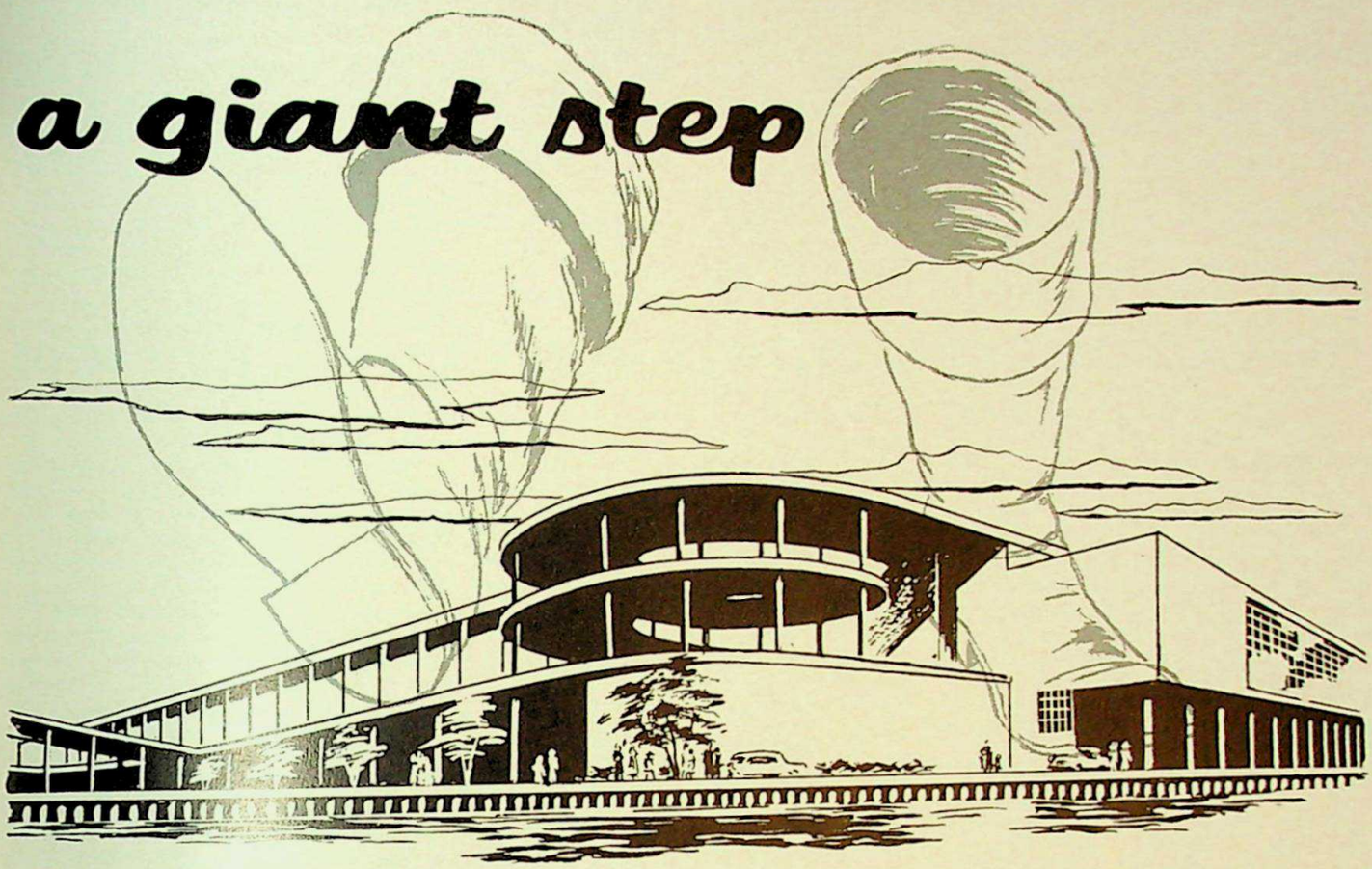
★ ★ ★

Valiant's smart new four-door sedan in the V-200 Series for 1961, the top of the line whose side moldings distinguish its models from those in the V-100 Series. A slim molding carries the length of the front fender and door sculpturing and includes a distinctive black and white medallion.

Also available in the V-200 Series is the four-door, two-seat Suburban, and a two-door hardtop.

★ ★ ★

a giant step



FORWARD!

Today the eyes of the nation are focused on Detroit as this dynamic city takes another giant step forward along the path of progress.

Magnificent Cobo Hall, housing Detroit's first National Auto Show, stands as a shining example of the ability of our farsighted civic leaders and citizens.

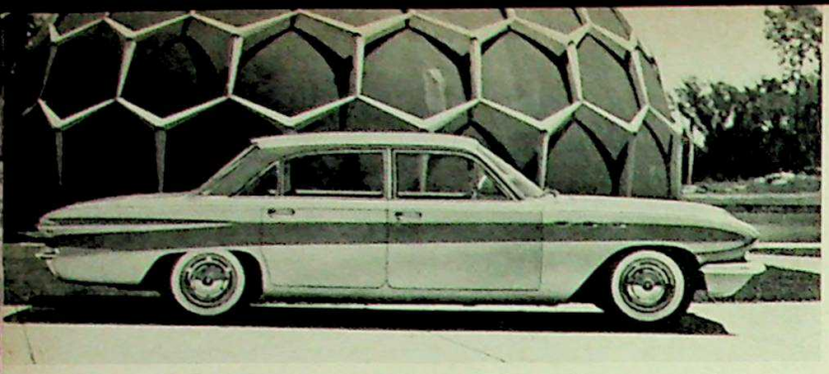
Commercial Steel Treating Corporation plays an active role in Detroit's continuing program of leadership. They too are taking "a giant step forward" with the inauguration of their new 40 foot gantry-type furnace, one of the largest in the world. This towering masterpiece of heat treating accuracy will clean-harden and gas-carburize rocket, missile, and industrial parts up to 28 feet long by 6 feet in diameter. Two huge treating plants offer complete heat treating facilities and services available nowhere else in the whole tri-state area. Full time metallurgists, working in Commercial's modern, fully-equipped laboratory, pay close attention to every detail.

If the job can be done, Commercial will do it, accurately, every time.

Commercial

STEEL TREATING CORPORATION

Plant #1: 6100 Tireman Ave. • Plant #2: 31440 Stephenson Hwy.



Here is Buick's entirely new, lightweight Special four-door sedan, powered by the first American aluminum V-8 engine in the automobile industry. It is mounted on a 112-inch wheelbase, is 188 inches long, and weighs 2,700 pounds, about 1,600 pounds less than conventional-size Buicks.

Classic simplicity of Buick's 1961 styling is demonstrated in the Electra 225 convertible with its broad, flat rear deck lid and heavy rear bumper tailored to the contours of the rear body design. It has a luxurious leather interior, and offers bucket seats as optional equipment.

Buick's Special Enters Economy Car Field

Buick's all-new line of cars for 1961, including the entirely new Buick Special powered by the first American aluminum V-8 engine in the automobile industry, were placed on display in dealer showrooms on Oct. 5.

The Special—Buick's entry in the economy field—is 188 inches long and weighs only 2,700 pounds, 1,600 pounds lighter than conventional models in the Buick line. Its light weight, moved by a 115-horsepower high-compression engine, gives it performance characteristics comparable to regular-size Buicks.

Strong Family Resemblance

The Special looks exactly like what it is—a small Buick, even to the traditional ventiports. "The strong family resemblance was intentional," said Edward D. Rollert, Buick general manager and GM vice-president. "The Special is a member of the Buick family and we want everybody to know it. Not only does it look like a Buick, it is engineered like a Buick and performs like a Buick."

The Special is available in two body styles, a four-door sedan and a four-door station wagon, with a standard and deluxe version of each.

The 15 models in the regular Buick line include seven LeSabres, three Invictas, three Electras and two Electra 225s.

The whole Buick line is styled with clean, sweeping lines, a conspicuous absence of chrome, and from the Special through the Electra 225 more headroom and greater passenger comfort are achieved through extensive styling and engineering changes.

Riding comfort has been improved by lowering the transmission tunnel and the additional headroom has been provided by the use of a completely new frame design.

Windshields have been restyled, and doors both front and rear open wider for easier entrance and exit. The rear deck is virtually flat and blends into the fender lines.

The Buick Special engine weighs only 318 pounds and is the lightest liquid-cooled power plant per cubic inch of displacement on the market. It produces 220 foot-pounds of torque, has an 8.8 to 1 compression ratio, and uses regular grade gasoline. Aluminum components include the cylinder block and heads. Alloy iron cylinder sleeves are cast integrally within the block.

Four V-8 engines available in the regular Buick line employ a wide variety of aluminum alloy parts, with a resultant weight reduction.

Transmission's Weight Cut

An entirely new air-cooled torque converter transmission — probably the most simplified automatic transmission on the market—is available as an option on the Special. An aluminum case, a converter pump with radial fins and two air exhaust openings in the converter lower housing provide the cooling. A three-speed synchromesh transmission, designed specifically for the Special, is standard equipment.

Buick's turbine drive transmission has been reduced six inches in length and 20 pounds in weight through a new design. This permits substantial lowering of the floor tunnel. Turbine drive is standard on the LeSabre and all other series in the regular line.

A two-piece drive shaft with a specially designed constant-velocity universal joint is a new concept on all models in the 1961 line. This CV universal joint resembles two conventional joints placed back-to-back and makes possible an extremely smooth-running drive line. It also permits a considerable reduction in the floor tunnel, thus providing greater interior legroom in all models.

The Special has a unitized body. An improved concept in frame design—an X-frame providing fewer body mounts and consequently less road noise transfer—is incorporated in Buick's regular line.

Trunk space is an impressive 17 cubic feet, achieved through restyling, relocation of the gas tank, and by stowing the spare tire on the trunk's front ledge.

Coil springs on all four corners of the car are continued on 1961 Buick models, with other new refinements made in the suspension system.

The transverse muffler system, first introduced by Buick, has been improved. Mounted crosswise at the rear of the car, the muffler maintains a minimum of back pressure with consequently improved fuel economy and performance.

Air-Cooled Braking

Air-Cooled braking has been extended to the Special. Slotted wheels and wheel covers take advantage of air pressure beneath the car to circulate cooling currents outwardly over the brake drums and dissipate the heat that destroys linings.

Finned aluminum front drums are used in the regular series with the radial-fin design incorporated in the rear drums. Fifteen-inch wheels permit 12-inch diameter drums with a gross lining area of 197.3 square inches. The Special, with 13-inch wheels, has 123.7 square inches

(*Continued on Page* 94)

★ ★ ★

Sweeping lines of Buick's 1961 styling are epitomized in the LeSabre series with its landau-type roof and windshield of new design. Doors open wider for easier entrance and exit. Interior roominess has been increased even though the over-all width has been reduced two inches.

The LeSabre models are mounted on a 123-inch wheelbase and have an over-all length of 213 inches, nearly five inches shorter than last year. A new, improved turbine drive transmission is standard equipment on all LeSabres.

★ ★ ★

Serving More People in More and Better Ways

19 Offices in Flint, Flushing, Swartz Creek, Ortonville

HELPFUL CORRESPONDENT BANKING
SERVICE BACKED BY NEARLY
NINETY YEARS OF EXPERIENCE

GENESEE MERCHANTS
Bank and Trust Company

MEMBER FEDERAL DEPOSIT INSURANCE CORPORATION

MEMBER FEDERAL RESERVE SYSTEM

Falcon Offers Higher-Powered Engine

A new 101-horsepower performance option—the Falcon 170 Special engine—has been announced for the Ford Falcon as it enters the 1961 model year following a most sucessful introductory year.

"No other car ever achieved the first year success to equal the Falcon's sales of nearly a half million since it was introduced in October, 1959," said James O. Wright, Ford Motor vice-president and general manager of the Ford Division.

Convex Shaped Grille

The 1961 Falcon, introduced by Ford dealers late in September, is offered in four models—two and four-door sedans and two and four-door station wagons.

The new Falcon has a convex-shaped aluminum grille, but preserves the styling and inside-outside dimensions of its predecessor. It continues to offer full six-passenger seating room, maneuverability of a sports car, and 23.7 cubic-foot trunk to carry luggage.

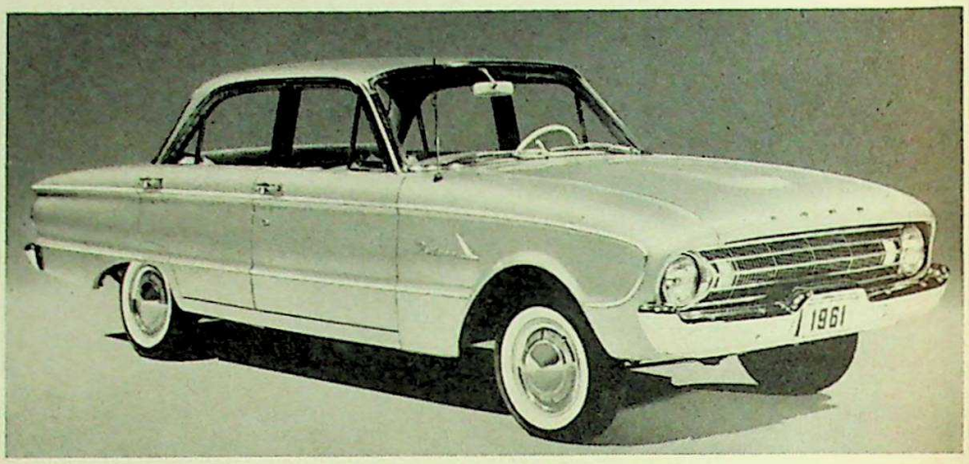
Among improvements on the 1961 Falcon are 2½ times thicker anodizing on the aluminum surfaces, double-wrapping of the aluminized muffler, galvanizing of additional underbody parts for greater rust and corrosion protection, and more effective use of stainless steel for parts such as the hub caps.

"For those who want increased performance—about 15 per cent better than the standard 85-horsepower, 144.3 cubic-inch engine—Falcon offers an optional 170 cubic-inch, six-cylinder engine that is rated at 101 horsepower," Wright said. Both engines operate on regular grade fuel.

Choice Of Transmisions

Both Falcon Sixes also have a new "snorkel type" air cleaner that results in quieter operation, more uniform air flow and smoother high speed engine operation. Engine front covers are cast from aluminum for better sealing. A new, optional automatic choke also is available with either engine.

Two transmissions, three-speed manual shift and Fordomatic—can be matched with either the standard or optional engine. Heavy-duty transmission and drive-line components are used with the Falcon 170 Special.



The 1961 Ford Falcon features a new convex-shaped aluminum grille and offers an optional, 101-horsepower engine, while otherwise preserving the styling, maneuverability and roominess of the 1960 model.

New appearance items on the Falcon include headlamp rims, rectangular parking lights designed to blend with the new grille, and new Falcon emblems on the sides of the front fenders.

Falcon station wagons have a crank-down tailgate window, with power-operated control optional. Falcon wagon load space length is more than seven feet, with a volume of 76.2 cubic feet—comparable to the 1957 Ford station wagon.

Schultz Forms New Public Relations Firm

Formation of the firm of Ward Schultz-Public Relations, with offices at 1139 First National Building, Detroit, has been announced by Ward Schultz, who has over 25 years' experience in Detroit newspaper, public relations, banking and general business fields.

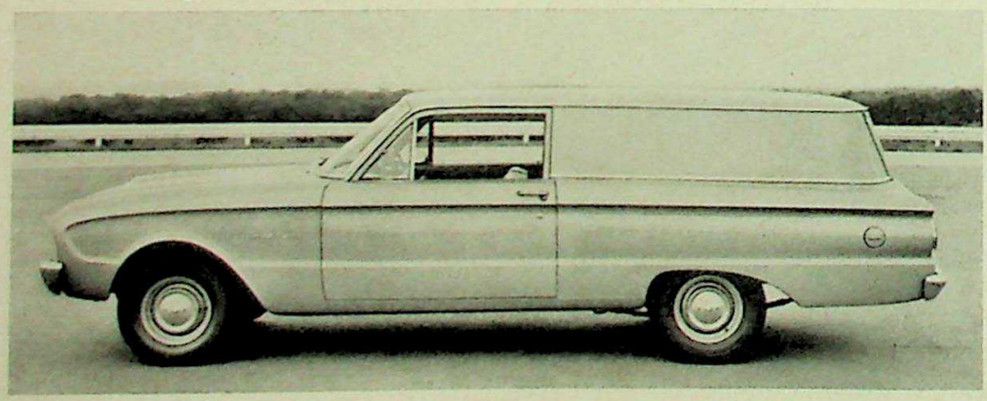
WARD SCHULTZ

Unique in public relations, the Schultz firm and that of James W. McCandless, who has been prominent in the field for more than 30 years, will enter a consultant association offering the clients of each the specialized capabilities of both. Their office suites will adjoin.

For 16 years, Schultz was with the Detroit Times, the last ten as financial editor. For a three-year period, he was director of public relations for the Detroit office of a national advertising agency, leaving to join a group which ultimately formed the City Bank. He became vice-president of the bank, resigning that post to become assistant to the president of the Pfeiffer Brewing Company in charge of public relations. In 1958, he was promoted to general sales manager, which post he held until recently.

The McCandless firm is well known in the general corporate and product public relations field, while Schultz will specialize in the financial and marketing aspects of the business.

Delivery Sedan Added To Falcon Line



A new member of Ford's economy vehicle family for 1961 is the Falcon Sedan Delivery, which now supplements the versatile Falcon Ranchero introduced some time ago. The Sedan Delivery has a cargo volume of 76.2 cubic feet. Standard power plant is the Falcon 85-horsepower engine.

Named By Sugar Beet Association

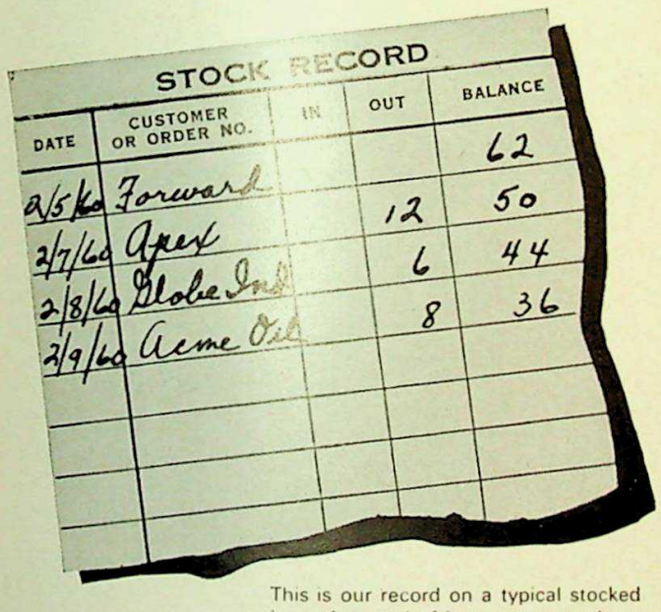
John A. McGill has been named advertising and public relations director of Farmers and Manufacturers Beet Sugar Association of Saginaw, it has been announced by C. A. Coryell, president.

J. A. McGILL

McGill, a recent graduate of Michigan State University, replaces Jack D. Brock, who resigned after 21 years with the association. The association is a research and promotional organization of the eastern beet sugar industry.

Previously, McGill had served in the University's Department of Information Services.

Thank You for the Order . . .



STOCK RECORD

DATE	CUSTOMER OR ORDER NO.	IN	OUT	BALANCE
				62
2/5/60	Forward		12	50
2/7/60	Apex		6	44
2/8/60	Globe Ind.		8	36
2/9/60	Acme Oil			

This is our record on a typical stocked item. A record of how many we have in stock, who uses it, how many they use and how often they order.

Every order we receive from you, large or small, by personal, mail or telephone transaction, becomes a part of the history of your firm's bearing usage.

Our system of identifying customers by name, not just numbers, in posting these orders, is a practice of many years standing. We've tried never to let a sale become an impersonal thing and as a result, we know you and your bearing requirements better.

Frequently, when posting orders, we observe opportunities for customers to save on paper work and better protect their operations against emergency shut downs by adjusting their bearing buying habits. It's always a pleasure when we detect such a condition to call it to the customer's attention.

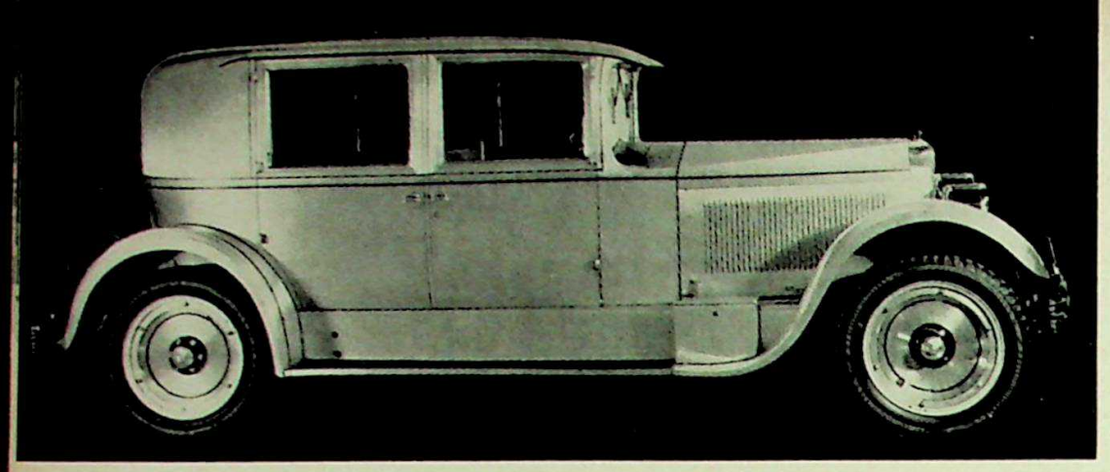
Your bearing usage is our mutual concern.

DETROIT BALL BEARING COMPANY *OF MICHIGAN*

AUTHORIZED DISTRIBUTORS & ENGINEERS

DETROIT — MAIN 110 W. Alexandrine Ave. TE 2-3400	DETROIT—EAST SIDE 21019 Mound Rd. SL 4-2440	DETROIT—WEST SIDE 25345 Plymouth Rd. KE 5-9400	BATTLE CREEK 515 Capitol S. W. WO 2-5515	FLINT 3501 N. Saginaw SU 7-6571	GRAND RAPIDS 48-50 W. Fulton St. GL 6-1678	JACKSON 1005 E. Michigan Ave. ST 2-0574
KALAMAZOO 424 Harrison St. FI 3-4661	LANSING 138 N. Cedar St. IV 5-9453	MUSKEGON 162 Apple Avenue PO 6-3216	PONTIAC 493 S. Saginaw St. FE 2-0211	SAGINAW 425 N. Washington Ave. PL 2-5155	TOLEDO 325 Tenth St. CH 3-3294	Resident Agent BENTON HARBOR Ka'zoo, FI 3-4661

AMERICAN • ANDREWS • AUBURN • COLGATE • COOPER • DBB • DODGE • FAFNIR • HYATT • KAYDON • KEYSTONE END BELLS • KILIAN • LINK-BELT McGILL • MESSINGER • METZGAR • MRC • NEW DEPARTURE • NICE • NORMA-HOFFMANN • ORANGE • RANDALL • ROLLWAY • SAGINAW PRODUCTS SCHATZ • SEALMASTER • STEARNS-STAFFORD • SKF • THOMSON • TIMKEN • TORRINGTON • UNITED AMERICAN METALS (Babbitts) • BALL NUT-SPLINE, SAGINAW STEERING GEAR DIV. • CIRC-O-LOX & SPIR-O-LOX RETAINING RINGS • CHICAGO RAWHIDE, GARLOCK, UNIVERSAL, VICTOPRENE OIL SEALS "O" RINGS • POPE SPINDLES • BUNTING CAST & SINTERED BRONZE & ALUMINUM • ZYTEL (NYLON) & TEFLON BARS, TUBING, SHEETS • LOCKNUTS LOCKWASHERS • STEEL BALLS • VERSA-MOUNT



★ ★ ★

In 1923 a famous British engineer, L. H. Pomeroy, was commissioned to design and build a car which would use aluminum to the fullest extent possible. Shown here is his car, which weighed approximately two-thirds that of comparable conventional cars. The model, now in the Henry Ford Museum, was driven nearly 200,000 miles over a ten-year period.

Thirty-seven years ago, this car pointed the way to a trend which today is making headlines as aluminum's usage in automobiles continues to grow.

★ ★ ★

Aluminum To Cut Weight; Lower Costs

"Weight is the enemy," Emile Mathis said. This quotation capsules the motivation behind early application of aluminum to automotive design and the rapid acceleration of the trend to light metals in recent years.

Enthusiasts see the age of aluminum and magnesium in cars approaching full bloom as the curve of pounds per car usage tilts ever more sharply upward. And they vision widening adoption of the all-aluminum engine block accelerating inroads into heavier metals.

Average Use Increases

Since the end of World War II the average amount of aluminum in American automobiles has increased 600 per cent. With several aluminum engines appearing in the 1961 offerings, plus expectations that every manufacturer will offer at least one line of engines of the light metal in the 1962 year, average poundage will be given another boost.

Hitherto aluminum has been entering automotive assemblies in a random, patternless way—a piece here and a piece there. Yet, in a decade the average usage increase has ranged between 10 and 15 per cent each year—from 12 or 13 pounds in 1959 to an estimated 56 pounds in 1960 models.

Boost Aluminum's Use

An even sharper increase may be in prospect in the next year or two when aluminum bumpers, mufflers and radiators are expected to be ready for introduction on some passenger cars.

While light metals have made gains on a "glamor" basis, particularly in exterior trim uses, the engineers' choice is based more on lowering cost and weight, thus increasing efficiency of the car—for ultimate benefits to the car buyer.

Aluminum applications were given a special nudge last year with the introduction of compact cars, which dramatized the drive of auto manufacturers to use aluminum's ability to reduce weight and increase efficiency.

One aluminum executive declared months ago: "The compact cars were designed for and born with most of the major aluminum applications developed in the last 10 years. They represent a take-off for new and accepted aluminum applications never before seen in the industry."

The die-cast aluminum rocker arm shown here represents one of the newest uses of aluminum in today's cars. Sixteen of the aluminum parts open and close valves 20 times a second in an eight cylinder automobile. They are being produced by Aluminum Co. of America.

All three new 1960 compacts used aluminum grilles, headlamp bezels and instrument panel overlays for trim, and aluminum pistons, oil pumps, carburetor bodies, fuel pumps and power train components among the functional parts.

Each of them also showed distinctive applications that will likely spread to other makes. Current previews of the 1961 models afford concrete evidence of this trend.

How Trend Developed

Before we look into the future, let's look back and see how these aluminum applications developed.

In 1898, Haynes used aluminum alloy in motor vehicles for the first time in this country.

Aluminum castings were widely used in the non-structural parts during the development period for American cars. Many early cars had an aluminum crankcase.

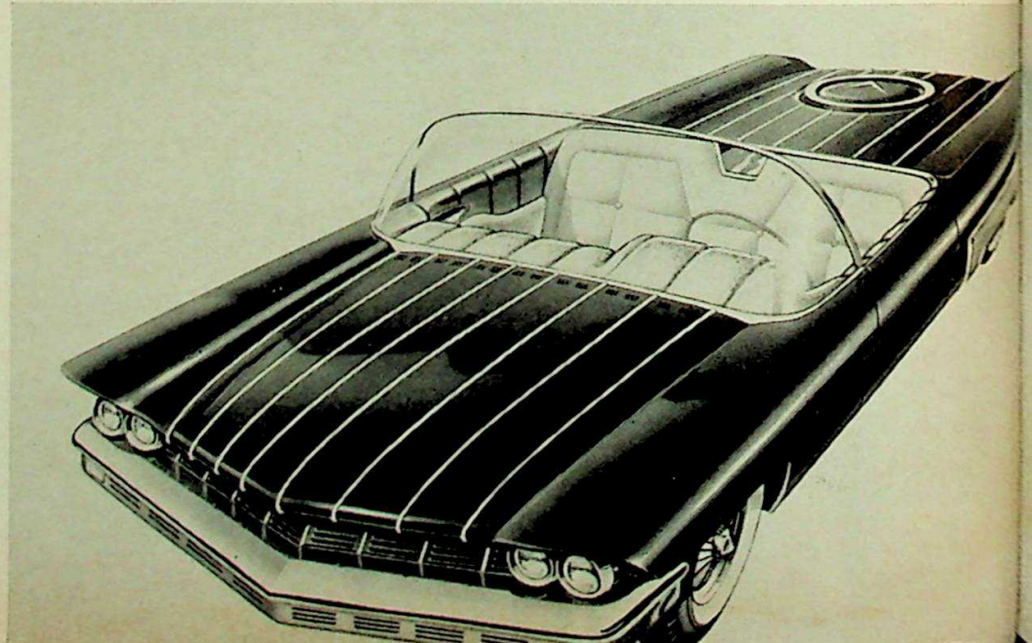
America's first luxury car, the Locomobile, built without regard to cost in the first decade of the century, had a number of non-structural cast aluminum parts.

Some cast aluminum parts were used in most of the pre-World War I cars. In 1912, the cast piston was introduced and aluminum pistons, permanent mold cast, were used in all Liberty engines built during the war.

Offered Aluminum Engine

Not until just after World War I ended were the first aluminum production engines built, the Premier being considered the first truly all-aluminum engine, the Marmon being nearly so, but using a cast iron cylinder head.

The Pomeroy was another (three were built in 1923) to make wide use of alu-



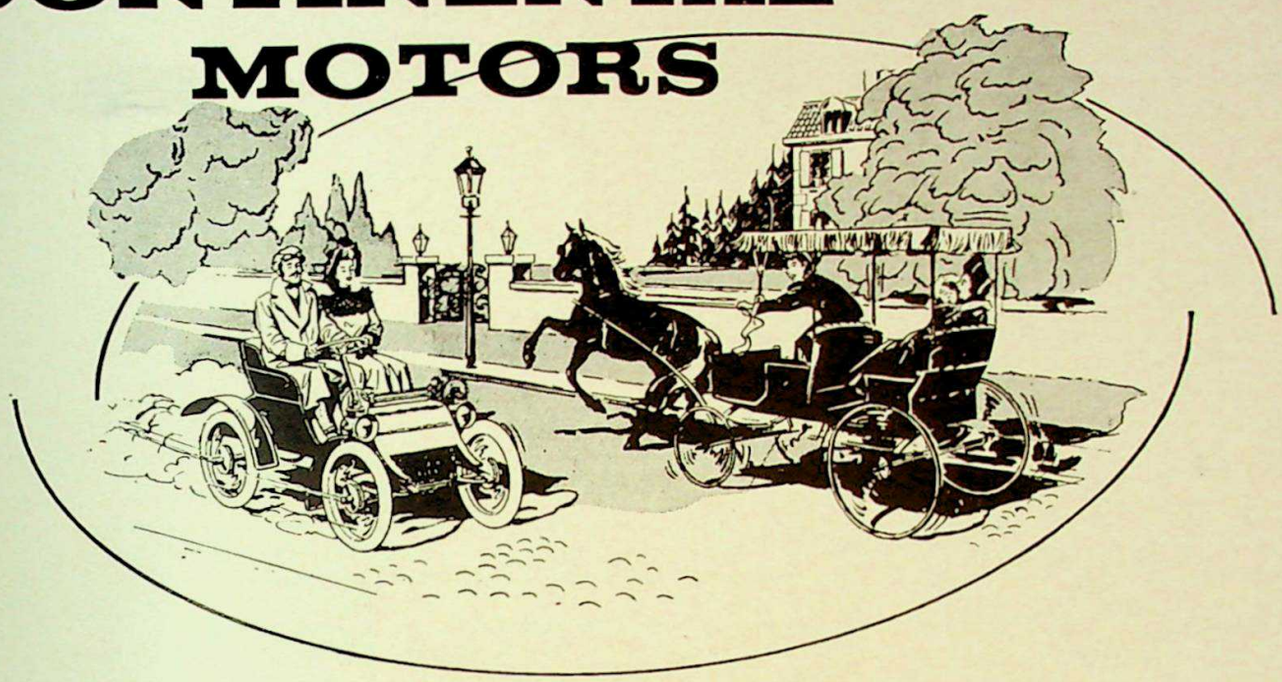
★ ★ ★

In the design of the car of the future, one of Reynolds Metals Company's concepts for the hood-grille area combines the hood and grille through the use of a single aluminum stamping. No internal supporting structure is used, although structural elements can be incorporated if needed.

Other integral design possibilities in this area include cowl air intake louvers, ornamental hood stiffening ribs, hood moldings, block letters, script and emblems—all in a single aluminum stamping.

★ ★ ★

CONTINENTAL MOTORS



WIDENING THE HORIZONS OF THE INDUSTRY IT HELPED TO BUILD

For nearly 50 years, Continental Motors has been famous for dependable internal combustion power. Today, the company whose product once gave life to more than half of all cars on the road not only continues to serve the great industry it helped to establish, but serves it in ways equally vital to that industry's well-being and growth. More and more of the specialized machines speeding the nation's mammoth highway-building program are Continental-powered. Upwards of 100 basic models—gasoline, diesel, lpg—built to some 2,000 specifications, each engineered precisely to the requirements of its job, are building satisfaction and profit for their users and for the equipment manufacturers. Road contractors, construction companies, off-highway machinery users of all kinds, are finding it truer than ever:

• ALL EQUIPMENT IS BETTER WITH CONTINENTAL RED SEAL POWER •

TODAY'S EXPANDED CONTINENTAL FAMILY

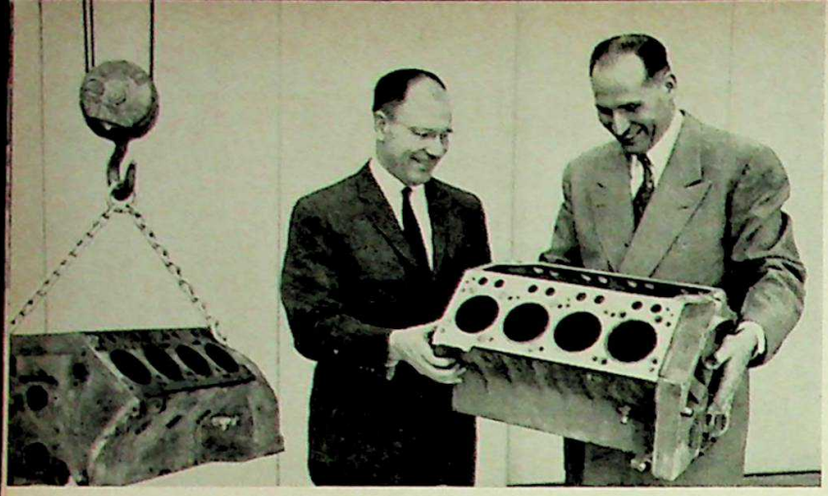
Continental Motors Corporation • Continental Aviation and Engineering Corporation
Gray Marine Motor Company • Wisconsin Motor Corporation • Novi Governor Division

BUILD DEPENDABLE POWER FOR HUNDREDS OF SPECIALIZED APPLICATIONS, ON LAND, AT SEA, AND IN THE AIR

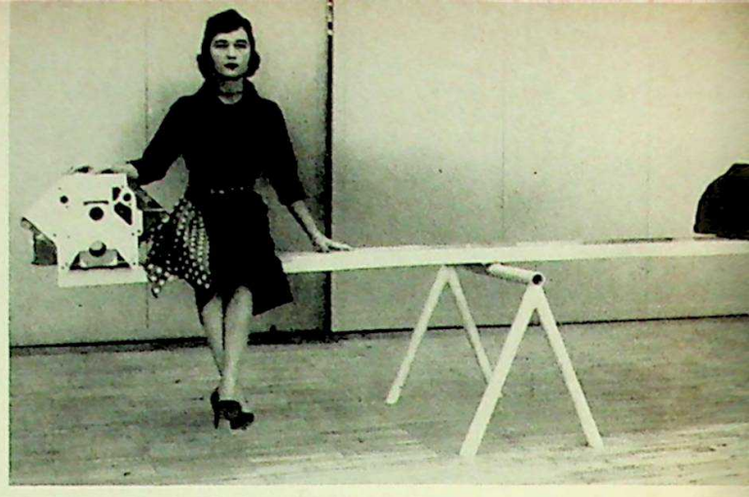
Continental Motors Corporation

CONTINENTAL MOTORS · Powerful as the Nation · AMERICA'S STANDARD ®

DETROIT • MUSKEGON • ATLANTA • DALLAS • ST. THOMAS, ONT.
GLASGOW, SCOTLAND



Darl Caris, of GM's Central Engineering Staff, and Don Henry, GM Research metallurgist, compare weights of similar cast iron and aluminum engine blocks. Weight has been cut by about 30 per cent with aluminum.



Audrey Zurawski, a pretty GM Tech Center employe, plus the aluminum engine block on the right, just balance the cast iron block of similar size on the left. Aluminum's use in motor cars is growing with each year's models.

minum. One, believed the only one left, is in the Ford museum in Dearborn. Aluminum was used in body, chassis and engine. Weight was two-thirds that of conventional cars. The model in the museum was driven for nearly 200,000 miles over a period of 10 years.

Used By Franklin In 1922

In 1922, a Franklin model had a six-cylinder aircooled engine using aluminum crankcase, pistons and connecting rods. In 1930, a switch on this engine from cast iron to cast aluminum cylinder head boosted horsepower 30 per cent, due to better cooling.

Among several experimental cars built after the Pomeroy was a Cole, featuring an experimental all-aluminum engine.

A 1930 Marmon V-16 production engine (only a few were built) had a one-piece aluminum cylinder block, cylinder heads and intake manifold of cast aluminum, and aluminum oil well, crankcase, valve covers and pump housings.

Peerless, in 1932, put out a few all-aluminum cars—some 16-cylinder and 12-cylinder engines. The cylinder block, heads, intake manifold, bell housing and transmission case were aluminum castings. Forged aluminum connecting rods and cast aluminum pistons were featured. The car frame was of aluminum sheet, the front axle an aluminum forging, and the rear axle of cast aluminum. All-aluminum also were the brake shoes, brake drums and wheels. The Thompson museum has what is believed the only example of this car.

Development Work Lags

Subsequently, development work on aluminum engines dragged its feet in America until a few years ago, when development of the Corvair engine was launched, and it was introduced in 1959.

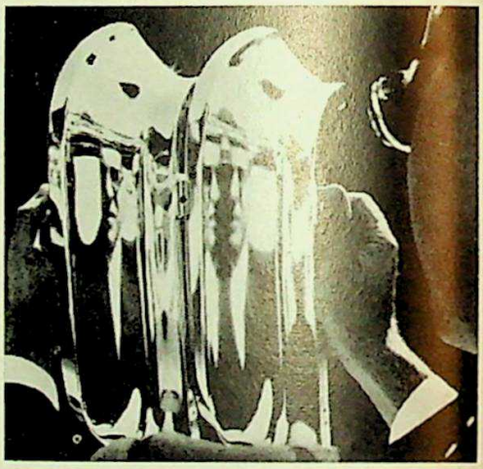
The aluminum in the Corvair engine components weighs 92 pounds of a total weight of aluminum in the car of nearly 103 pounds . . . this with a standard transmission.

The advantages in aluminum engines—in offering the motorist a big weight saving factor and greater dissipation of heat, and thus more gasoline economy—have been recognized for years by the auto industry. But the main problems were cost, casting techniques and strength, and chemical reactions. For example, special antifreeze had to be developed because old types reacted chemically when they came in contact with aluminum. Both the auto and aluminum industries feel these problems have been solved.

So we come again to the prime requisite for progress in materials' usage—availability and adaptability.

Improvements In Processing

Aluminum now is available in more forms—sheets, extrusions, bars. There have been improvements in processing, better control of raw materials, tempera-



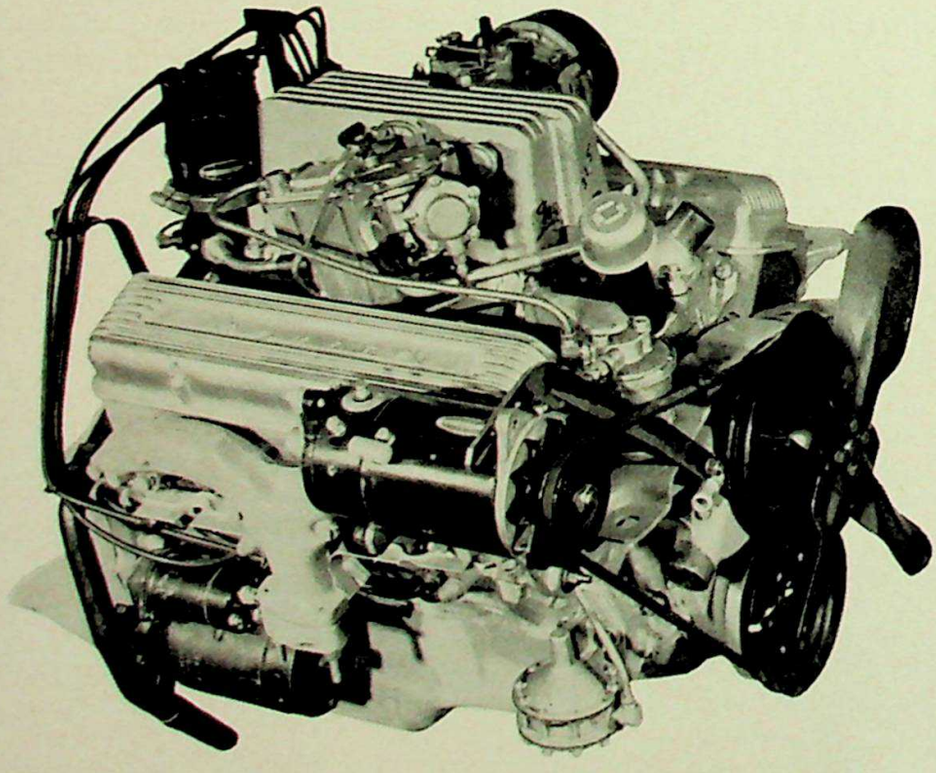
Identical samples of the same aluminum alloy show new brightness and reflectivity for decorative uses. Alcoa "upgraded" the brightness by modifications in the anodizing technique. Most car makers have accepted the newly-finished aluminum for trim use on 1961 autos.

ture control, etc. We've got to the point where we can cast better and do it continuously—it never stops. Thus quality and availability are improved.

Secondly, industry has greatly improved its ability in die casting of aluminum. This is important because they can make the part to exact size, and finish it speedily in limited floor space. Other advantages are ability to combine dies and make many parts at one time, reduction in finishing operations, and flexibility in design.

All these things have worked well in

(Continued on Page 72)



Reynolds supplies aluminum for Chevrolet to produce the many aluminum parts that go into the manufacture of this fuel injection engine for Chevrolet's famed sports-type car, the Corvette.

Prophet Food Service Management

—GEARED TO MEET ALL REQUIREMENTS

Operations Include: Cafeterias and Dining Rooms, Food and Beverage Vending Services, Catering of Special Events for Clients.

Prophet Serves

550,000 Meals Daily

(13,000,000 Meals Per Month!)

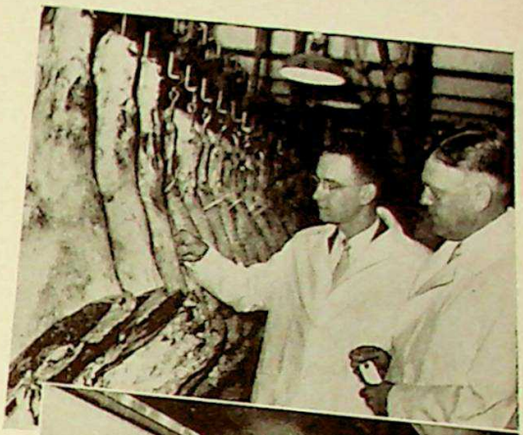
- Industrial Plants
- Office Buildings
- Hospitals
- Bank & Insurance Buildings
- Colleges and Universities
- Camps, Y.M.C.A. s, Etc.
- Department & Specialty Stores
- Armed Force Bases

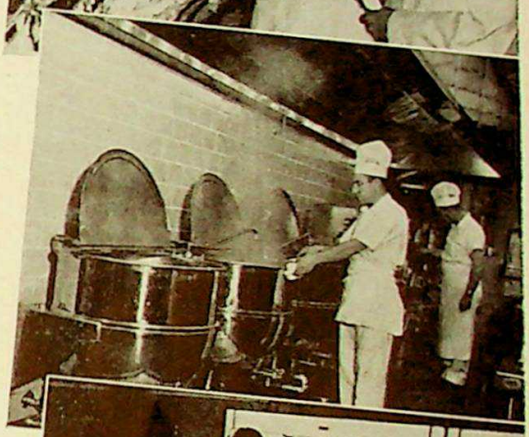
Prophet Proudly Provides Efficient Food Services in 93 Automotive Plants—from Coast-to-Coast (33 in Michigan).

SINCE TPC 1919

The Prophet Co.

Fisher Building
Detroit 2, Michigan





In the Detroit Area the Monte's Restaurant Division of The Prophet Co. Operates—

Two Fine Restaurants
Outstanding for Quality
and Service

★ AIR CONDITIONED
★ BANQUET FACILITIES
★ AMPLE PARKING

Monte's Restaurant and Cocktail Lounge

Van Dyke Rd.—N. of 12 Mi. Rd.—JE 6-1020
(EXECUTIVE INN -opp. G.M. Tech. Center)
OPEN DAILY 7 A.M.-2 A.M. Sun. 7 A.M.-9 P.M.
Serving — Breakfasts • Luncheons • Dinners
Featuring — FAMILY STYLE DINNERS
Every Sunday 12 NOON-9 P.M.

TEROVA'S Rathskeller

6521 John R.
1 Blk. So. of Gd. Blvd.
TR 1-1665
LUNCHEON 11 A.M.-2 P.M.
DINNER 5 P.M.-1 A.M.
Closed Sundays

★ ★ ★

Ford's new light duty Econoline commercial vehicles come in three vehicles —a pickup, van and an eight-passenger station bus. Powered by an economical 85-horsepower Falcon engine and utilizing many standard components from other Ford products, the Econoline vehicles are 168.4 inches long—nearly two feet shorter than the Falcon station wagon.

★ ★ ★

Ford Offers Econoline Commercial Units

Ford Motor Company late in September announced a new low-cost Econoline series of commercial vehicles with three models—a pickup, van and 8-passenger station bus, each mounted on a 90-inch wheelbase.

"Econoline units carry a volume and load comparable to conventional pickup and panel trucks, yet have far less weight, greater maneuverability, offer much better economy and take up less space," said Wilbur Chase, Ford Division truck marketing manager. "They will compete with imported small trucks, but will provide more comfort and better performance."

168 Inches In Length

Each of the Econoline models has an overall length of 168.4 inches—nearly two feet shorter than the Falcon station wagon. Overall width is 72.5 inches for the pickup, 75.8 for the van and bus. Overall height varies from 77.2 to 79.2 inches, depending on model and springs.

The engine in these vehicles is mounted forward beside the driver's seat. This allows ample pass-through space in the front, flat floors front and rear, low 25-inch loading heights, and easy accessibility to the engine without disturbing the cargo.

The new vehicles are powered by a modified version of the 85-horsepower, 144-cubic-inch engine which has proven its dependability and economy in Falcon passenger cars, the Falcon Ranchero and the P-100 parcel delivery truck.

Curb weight for the standard pickup is 2,389 pounds and only 2,711 pounds for the station bus equipped with optional heavy duty spring and tires. Payload capacity for the pickup and van is more than 900 pounds each, with standard equipment, and nearly 1,700 pounds with the heavy duty package.

Length of the load space area is over seven feet in each of the three vehicles. Sides of the pickup box are 23 inches high, yielding a 73 cubic-foot volume. Interior height of the van and bus cargo area is 54 inches, with a total volume behind the front seat of 204.4 cubic feet. Tailgate and cargo doors are more than four feet wide.

Excellent Maneuverability

Unexcelled front vision and maneuverability are offered with the modern cab-forward design. The bus has full 360-degree vision. The pickup has optional rear quarter windows and the van is available with both solid and windowed rear doors.

An efficient fresh-air hot-water heater-defroster unit with simple controls is mounted underneath the instrument panel.

Maximum ground clearance on Econoline models is seven inches, and standard rear axle ratio is 3.50 to 1.

1961 Continental's Dimensions Reduced

Styled in the classical tradition of its predecessors, the completely changed 1961 Lincoln Continental has smaller dimensions in height, width and length than previous models, it has been revealed by Ben D. Mills, Ford Motor vice-president and general manager of the Lincoln-Mercury Division.

"For several years, we have been searching for a new interpretation of a luxury automobile that would meet all practical requirements of the fine car buyer," Mills said. "We believe we have anticipated correctly these needs in the 1961 Lincoln Continental."

Soft Top Convertible

The Lincoln Continental is produced in two models, a four-door sedan and a four-door soft top convertible, with a completely automatic top.

Although announced early in October, the Lincoln Continental car line will not be introduced in L-M dealerships until early in November. It will be shown at the National Auto Show in Detroit.

Engineers have developed a car with improved materials, closer tolerances, precision fittings and a stronger body with more and better sound-deadening materials.

The car's torsional rigidity, or ability to stand twists and strains, has been improved by 67 per cent. Interior comfort has been improved by reducing the transmission hump by 50 per cent.

30,000-Mile Lubrication

A smoother ride is due to improvements in the front and rear suspension, shock absorbers and spring mountings. A greater use of rubber isolates metal components.

In addition, the car is easy to handle because of a lower center of gravity, a reduction in wheelbase and overall length, and a smaller diameter steering wheel set at a new angle.

Better brakes give a 100 per cent increase in potential life, and new tandem action windshield wipers provide variable speeds and quiet operation.

Maintenance features include a 30,000-mile lubrication-free steering and suspension system, a 6,000-mile oil change and nylon coating on all instrument panel wiring.

Undergoes Severe Tests

The Lincoln Continental will undergo three exclusive major tests in addition to the usual wide range of quality inspection methods. Every car will be road checked (12 miles), each engine and transmission will have a lengthy "hot" test, and all wiring will be subjected to an electronic circuit testing machine.

The engine, rated at 300-horsepower,

(*Continued on Page* 81)

★ ★ ★

The 1961 Lincoln Continental is a completely new, luxury car with smaller dimensions in length, height and width. It is available in two models, the only four-door soft top convertible produced in America (shown here), and a four-door sedan.

★ ★ ★

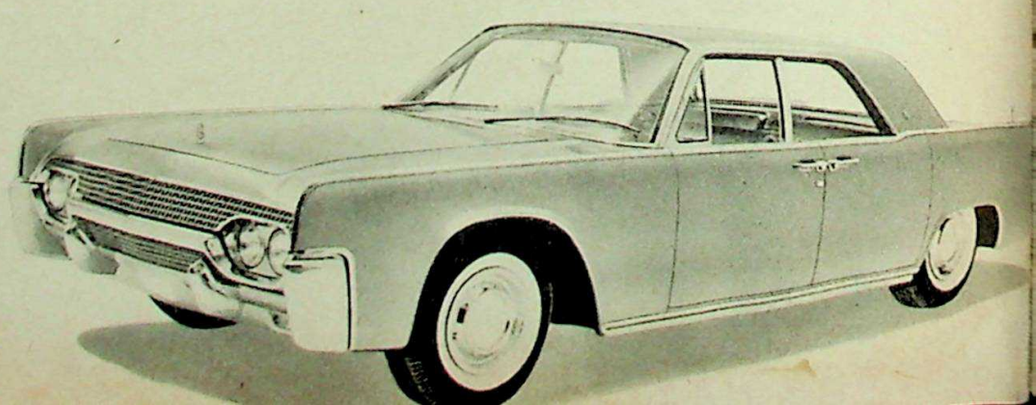


Photo by Tony Spina—Free Press Chief Photographer

WORLD'S LARGEST INDUSTRY SHOW SAYS IT!!!

Detroit Leads the Way!

October 15th-23rd, the nation's attention will be centered on the 1961 models displayed at the 43rd National Automobile Show in Detroit's new Cobo Hall-Convention Arena.

Cobo Hall-Convention Arena is the spectacular 54 Million Dollar showpiece of Detroit's inspiring 100 Million Dollar downtown Civic Center.

It is the World's Largest Exhibition Building! It overlooks the World's Busiest Waterway!

Detroit, with its new Cobo Hall-Convention Arena, now bids strong to become one of the world's greatest convention and trade show cities. Already confirmed and tentative bookings promise an influx of 300,000 visitors in 1961.

A great new business upsurge is anticipated for Detroit.

The Detroit Free Press invites inquiries from all business and industry interested in the healthy, vigorous climate of this great industrial state.

For the amazing story of Free Press growth and leadership, ask your Story, Brooks & Finley man.

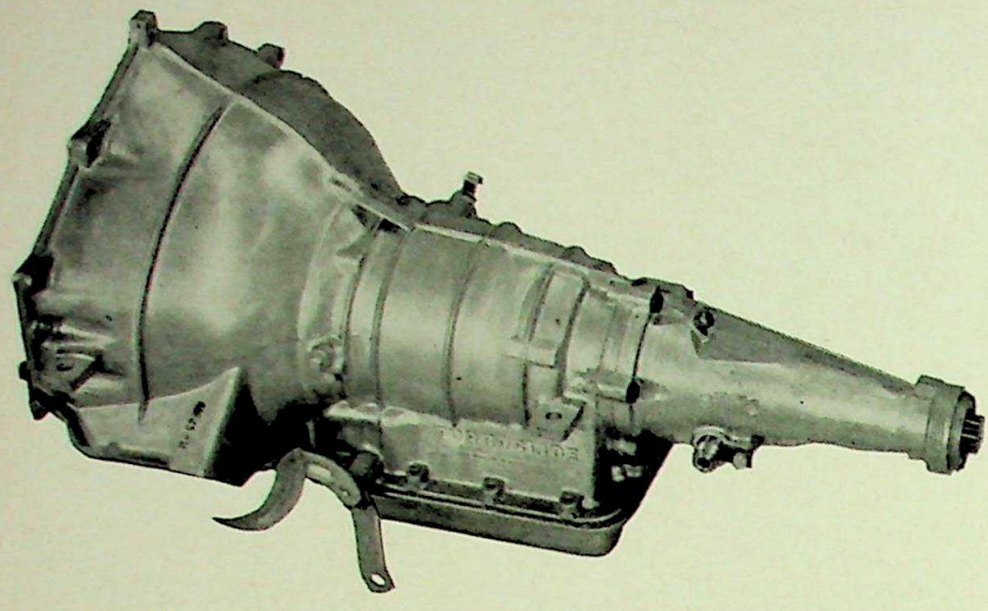
THE NO. 1 NEWSPAPER IN MICHIGAN

1 newspaper at 1 low cost provides basic coverage of METROPOLITAN MICHIGAN . . . delivers the Detroit Retail Trading Area . . . PLUS Michigan's Standard Metropolitan Statistical Areas!

The Detroit Free Press

Michigan's *Only* Morning Newspaper

National Representatives: Story, Brooks & Finley



Aluminum has made heavy inroads in the production of automatic transmission housings. Cast aluminum housings now predominate as in the case of this Chevrolet aluminum Turboglide transmission.

Means Savings In Weight

(Continued from Page 68)

the picture, and industry also has learned better welding and better finishing. They have been anodyzing aluminum for some time for interior and exterior trim and can plate it, too, though this is not easy.

Safety A Factor

One current development in the light metal, aside from weight saving is in the realm of safety—one of the most compelling reasons for greater use of aluminum in cars. As size, weight and horsepower of 'standard' cars increased, it became ever more difficult to stop them within a safe distance.

As the point arrived where the braking surface no longer was great enough to effect a sure stop of a heavy car at high speeds, two alternatives were suggested. One answer was to decrease the weight so available braking surface is sufficient. The other answer was development of the finned aluminum brake which, due to the characteristics of the metal, dissipates more readily the heat generated. This means more effective braking with the same brake area.

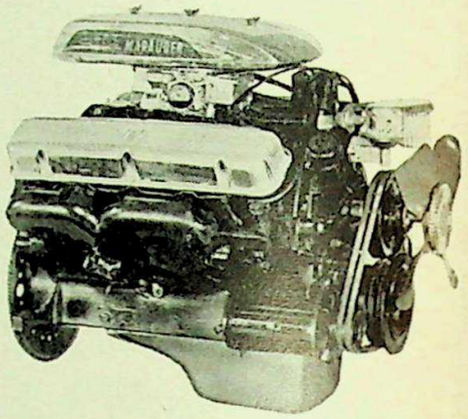
New developments come up frequently in the light metal field. Two of the newest were announced in mid-summer.

Aluminum Bumpers Seen

Aluminum Company of America unveiled a new process likely to be used in production of parts for 1961 models. It is a new finishing process claimed to improve Alcoa's brightwork alloys for automotive and other decorative uses of the light metal.

And Reynolds Metals Co. announced new mass production techniques for using the metal in manufacture of automobile parts are presently expected to speed the adoption of aluminum bumpers for at least one 1961 model. The company reports that production costs of the item can be cut by from 10 to 20 per cent, depending on their size, and that the bumpers will be 50 per cent lighter and as strong or stronger than those now in use.

The process is claimed to cut tooling expense in half and effect other savings, a spokesman said, and "can be varied to make other automobile parts competitive in price and superior in corrosion resistance, appearance, weight saving and in some strength." He added, "other parts,



Aluminum also finds its way into the production of this air cleaner on the well known Mercury Maruader engine.

such as dash boards, window frames and wheels, are good prospects for the process,"—the so-called warm-forming method.

Allied with aluminum in the light-metal drive for expanded automotive usage is magnesium, a wonder metal of different properties. Let's examine this one next.

Expansion Of Magnesium Use Looms

The picture in another light metal, magnesium, has followed a pattern similar to that of aluminum's earlier development. Its applications until lately have been most limited, due to the economic 'law' that applies to other materials—availability, and processing to put it to use.

This material occurs in inexhaustible amounts in the earth and in the sea. Industry had to learn how to make this potentially plentiful material available in dependable quantities, and learn how to handle it. Fabrication, too, is relatively difficult, but industry is learning ever improved techniques.

Dow A Leader

Magnesium is formed hot, and technicians have learned advances in hot forming and steps in quality control. They know a lot more about castings, extrusions, etc., than they did not so long ago.

Dow, principal magnesium producer, now has a continuous wide sheet mill making the materials available. Magnesium so far has found its best application where combination of light weight and strength is desired. The light metal now is working its way down, so to speak, to broader applications.

This wonder metal long awaited only a greater permanency of protection from corrosion to merit achieving a higher ratio to aluminum in the field of light metal construction.

While aluminum and plastics have been making their continuing contributions to weight reduction in automobiles, magnesium has been readying to forsake the wings of the stage, and make similar contributions. This metal is one-third lighter than aluminum and boasts higher ratios of strength and rigidity to weight.

Magnesium Is Ready

Leland I. Doan, president of Dow Chemical Co., said in mid-summer: "We believe that the cars of the future will be significantly influenced by work in Dow Laboratories." (The company scheduled operation November 1 of a new laboratory to help customers meet their problems in magnesium applications.)

"We think magnesium is ready for Detroit. We think that as a result of our mutual efforts it will grow in automotive use and in many other die casting operations."

Dow experts say there are about 60 pounds of "proved applications per car" for magnesium die castings. This is a little more than the estimated 56 pounds per car in actual uses of aluminum in all automotive applications this year.

Used On Race Cars

Dow lists other possible production applications in cars, such as clutch and torque converter housings, convertible top mechanism, engine fan, and parts for oil pump and filter, fuel pump, steering column, etc.

Magnesium sheet was introduced in bodies for Indianapolis race cars in 1956, and sand cast magnesium wheels have lately become standard on entries at Indianapolis.

(Zinc on Page 76)

U. S. Defense Contracts Awarded In Michigan

Prepared in cooperation with the U.S. Department of Commerce

U.S. AIR FORCE

Product	Contractor and Address	Value
Overhaul aircraft engine	Utica Div., Curtiss-Wright Corp., Utica	$1,723,296
Microphone	Electro-Voice, Inc., Buchanan	79,654
Hydraulic pump	National Water Lift Co., Div. of Cleveland Pneumatic Industries, Inc., Kalamazoo	95,285
Generator spare parts	Ram Meter, Inc., Ferndale	31,779
Training group rocket, engineering data, technical publications	Michigan Tectronics, Inc., Detroit	28,663
Insulating compound	Dow Corning Corp., Midland	39,770
Depot level maintenance of inertial guidance system	AC Spark Plug Div., GM, Flint	500,000
Services and supplies to operate storage site guidance system	AC Spark Plug Div., GM, Flint	50,000
In-service engineering support	AC Spark Plug Div., GM, Flint	200,000
Automatic flight control system	Lear, Inc., Grand Rapids	332,999
Aircraft spare parts	Lear, Inc., Grand Rapids	88,806
Engineering, design and fabrication of tooling in space programs	Progressive Welder and Machine Co., Pontiac	150,000
Services and supply support for depot level maintenance	Burroughs Corp., Detroit	75,000
Guidance subsystem computers and associated connection with various ground support	Burroughs Corp., Detroit	167,000
Kits to support fuel control	Holley Carburetor Co., Warren	43,297
Overhaul and convert Packette engines	Continental Motors Corp., Muskegon	138,302
Rail repairs to test track	Dearborn Machinery Movers Co., Inc., Dearborn	27,000
Services and materials for study	Regents of University of Michigan, Ann Arbor	300,000
Conduct theoretical investigation of non-linear modeling of equations of plasma physics	University of Michigan, Ann Arbor	94,000
Overhaul and modification of hydraulic pumps	Vickers, Inc., Detroit	58,568
Drier, portable type	Jensen, Inc., Detroit	48,880
Tires, pneumatic ice grip	U.S. Rubber Co., Detroit	466,983
Tires, pneumatic ice grip	U.S. Rubber Co., Detroit	358,370
Hose assortment, rubber hydraulic and pneumatic	Aeroquip Corp., Jackson	38,783

ARMED SERVICES

Fluorescent lighting fixture	Sun-Lite Mfg. Co., Detroit	10,525
Wiping rags	Ace Wiping Cloth Co., Detroit	18,232
Nuts, bolts and screws	Detroit Bolt & Nut Co., Detroit	31,423
Cherries, canned	Elberta Packing Co., Ishpeming	74,177
Cherries, canned	Elk Rapids Packing Co., Elk Rapids	118,803
Cherries, canned	F. & M. Packing Co., Traverse City	98,707
Bolts	Detroit Bolt & Nut Co., Detroit	15,000
Inner tubes, pneumatic	U.S. Rubber Co., Detroit	141,300
Tubes, steel welded	Standard Tube Co., Detroit	81,844
Steel tubes, seamless	Michigan Seamless Tube Co., Detroit	25,263
Mallet, wood	Holbrook Wood Products Co., Coldwater	26,925
Coffee	Becharas Bros. Coffee Co., Detroit	79,900
Coffee	Becharas Bros. Coffee Co., Detroit	50,270
Remover paint	Wyandotte Chemicals Corp., Wyandotte	188,736
Diesel engine drive generators	Detroit Diesel Engine Div., GM, Detroit	121,600
Repair parts for generators	Detroit Diesel Engine Div., GM, Detroit	1,968
Cryogenic tanks	Ronan & Kunzl, Inc., Marshall	31,308
Beef tenderloins	Rem Packing Company, Detroit	30,300
Chloramphenicol palmitate suspension	Parke Davis & Co., Detroit	105,984
Office machines	Equipment & Systems Marketing Div., Burroughs Corp., Detroit	
Coffee	Becharas Brothers Coffee Co., Detroit	21,664
Canned cherries	Lawrence Packing Co., Lawrence	35,899
Aluminum outboard motorboat	Harwill, Inc., St. Charles	40,644
Trucks	Ingersoll-Kalamazoo Div., Borg-Warner Corp., Kalamazoo	597,999
Trucks	Chevrolet Motor Div., GM, Detroit	231,270
Bond paper	Hawthorne Paper Co., Kalamazoo	30,002
Envelopes	Service Envelope Co., Detroit	
Physical inventory of aluminum at GSA-DMS Depot, Somerville, N.Y.	Kennedy Contracting Co., Inc., Detroit	83,000
Experimental and research work various space programs	Chrysler Corp., Detroit	7,609,987

U.S. NAVY

Repair parts for Diesel engines	Detroit Diesel Engine Div., GM, Wayne	29,064
Design, develop, fabricate, procure and install special production tooling	Lyon Inc., Detroit	1,093,475
Pumps, drawings, repair parts	Blackmer Pump Co., Grand Rapids	51,310
Technique for hot working in austenitic phase to produce high strength steel rocket cases	Lyon, Inc., Detroit	147,002
Engines, Diesel	Gray Marine Motor Co., Detroit	57,288
Engine, Diesel, main propulsion	Detroit Diesel Engine Div., Detroit	161,742
Propeller	Michigan Wheel Co., Grand Rapids	50,134

U.S. ARMY

Electrical equipment shelter	Metro Engineering Co., Inc., Detroit	125,280
Studies on response of the normothermic and hypothermic liver	University of Michigan, Ann Arbor	25,000
Battlefield surveillance	Regents of University of Michigan Ann Arbor	441,000

U.S. ARMY ENGINEERS

Furnishing and erecting prefabricated metal building	Champion, Inc., Iron Mountain	43,834
Construction, latrine facilities	Albert D. Thomas, Inc., Grosse Pointe	50,521
Construction railroad spur line	Roth, Wadkins & Wise, Dearborn	77,750
Modification to sewage lift station building	Fullerton Construction Co., Detroit	63,300
Rehabilitation of structures of AAA sites	A. J. Etkin Construction Co., Oak Park	$250,840
Switchboards and appurtenant equipment	Kirkof Electric Co., Grand Rapids	191,586

DETROIT ORDNANCE DISTRICT

Inspection equipment control agency services	Chrysler Corp., Detroit	18,632
Turret and gun shield armor castings	Chrysler Corp., Center Line	73,441
Combat tank	Chrysler Corp., Detroit	3,100,000
Voltimeter, gage	AC Spark Plug Div., GM, Flint	82,364
Repair carburetor kit	Holley Carburetor Co., Warren	88,322
Solenoid clutch and complete set of drawings	Rett Products Co., Detroit	122,439

DETROIT ORDNANCE TANK-AUTOMOTIVE COMMAND

Body assembly	Dura Corporation, Oak Park	26,113
Commanders traversing elevating control assembly	Rett Products Co., Detroit	45,720
Box, slip ring assortment	Richards Electronic and Engineering Co., Detroit	98,985
Bearing set	Detroit Aluminum and Brass Corp., Detroit	35,914

U.S. QUARTERMASTER

Bag, waterproof, clothing	Capac Mfg. Corp., Capac	147,014

DuPont Plants Generate State Purchases

Four Michigan plants of E. I. duPont de Nemours & Co., in Ecorse, Flint, Montague and Wyandotte, generated more than $19,200,000 in direct buying power in Michigan last year, the company reports. A survey of Michigan operations showed company payrolls of $5,700,000 with purchases of goods and services from 1,339 Michigan concerns totaling almost $13,500,000.

Carrier Forms Steel Transport Division

Formation of a Steel Transport Division, and appointment of Richard A. LaFonde as its general manager, has been announced by William C. Blair, president of Great Lakes Express Company, Saginaw. The division will offer complete services in transporting steel and heavy machinery to and from the steel centers of Gary, Cleveland, Akron, Canton, Youngstown, Pittsburgh and Detroit. Division offices will be at 2625 North Grand River avenue, Lansing.

Special techniques and processes available to help solve problems in production and development programs are described in a new booklet entitled "Got A Problem?", which is being released by Eaton Manufacturing Company's Valve Division in Battle Creek.

The Dart is Dodge's popular entry in the low-price field, stressing economy in every component of the 1961 models. An alternator prolongs battery life; rust-proofed Unibody assures longer body life.

Shown here is the 2-door Phoenix hardtop, one of 29 models in the 1961 Dart line. Both six and eight-cylinder engines operate on regular grades of gasoline. Seats are higher and headroom is greater.

Dart Boosts Economy-Styling Features

Beginning its second year with completely new styling, a host of engineering improvements and a wider selection of engines, the 1961 models of the popular Dodge Dart went on public view at Dodge dealerships on Sept. 29.

"We are firmly convinced that our new models are the best-engineered and the most carefully built cars ever to leave Dodge plants," said M.C.Patterson, Dodge general manager. " In 1961, the Dodge Dart will be the quality car in the low-price field." He emphasized that many of the mechanical modifications in the new Dart were made to provide even greater economy of operation and maintenance.

Three Series Offered

Patterson said the 1961 Dart is freshly styled on the outside, and also is new on the inside. The interior features new nylon and rayon fabrics, a distinctive instrument panel, a new door trim design, color-keyed steering wheels, and contemporary color combinations. Sixteen different Super Enamel and Super Metallic Enamel colors are available, 12 of which are completely new. Twenty-one two-tone color combinations are offered.

The 118-inch wheelbase Dart is available in three series—the lowest price Seneca, the Pioneer, and the deluxe Phoenix. Offered in the three series are 29 sedan, hardtop, station wagon, convertible and fleet models. "The Dart again will be competing in size and price, series for series, with the three other standard-size cars in the low-price field," Patterson stated.

A choice of six different engines is offered the Dart buyer in 1961, with both six and eight-cylinder power plants operating on regular grades of gasoline. The Economy Slant Six, an advanced design six-cylinder engine which was introduced last year, again is available on all Dart models. Inclined at an angle of 30 degrees, it has 145-horsepower and a displacement of 225 cubic inches. Compression ratio is 8.2 to 1.

Wide Choice Of Transmissions

The standard eight-cylinder engine is a 230-horsepower, 318-cubic-inch V-8 which calls for a two-barrel carburetor as standard equipment. A 260-horsepower V-8 with four-barrel carburetor is optional on all models.

Three high-performance V-8 engines also are offered in 1961, including the 305-horsepower D-500; a 325-horsepower police special; and a 330-horsepower V-8 with special ram induction manifolding.

A wide choice of transmissions also is offered. The Dart provides a three-speed automatic which was designed to match the output of the V-8 engines, and a Torqueflite-six, three-speed automatic transmission for the Slant Six engine. There also is a two-speed automatic Powerflite transmission for use with the standard V-8. A new manual transmission is standard on the 361 cubic-inch (D-500) and 383-cubic-inch (police special and ram induction) engines.

Fender Reverse Curve

The front end of the new Dart features a wide concave aluminum grille which encircles the dual headlights. Projections at the ends of the wrap-around front bumper provide housings for the parking lights. A newly designed hood has simulated louvers near the base of the windshield.

The front fender sculpturing flows smoothly into the side of the body. The rear fenders rise slightly just behind the door and taper rearward into a dramatic reverse curve that sweeps forward. Horizontally styled tail lights with flush lenses are positioned directly above the rear bumper.

Station wagons, available in the Seneca and Pioneer series, feature a "torpedo" tail light and rear fender treatment, which distinguishes them from the rest of the Dart line. The wagons have a 122-inch wheelbase.

The alternator replaces the direct-current generator, and is capable of delivering up to ten amperes of electricity to the battery while the engine is idling.

Other Dart engineering advances include: A redesigned distributor; a solenoid-shift starter which gives new starting quietness and reliability; a heavy-duty manual transmission for the high-performance engines; a light-weight manual transmission for the 318-cubic-inch V-8 engine; a fabric-reinforced coupling which ensures smooth and easy steering in all cars equipped with manual steering; five-leaf rear springs for the six-cylinder Dart to provide longer life; and redesigned shock absorbers for a quieter and smoother ride.

Many Accessories Optional

The 1961 Dart again features Torsion-Aire suspension, which virtually eliminates front-end dip, acceleration squat, and body sway. Unibody construction, and advanced rustproofing, silencing and sealing processes are other features.

A long list of options are offered on the 1961 Dart including the following convenience and safety accessories: Molded-rayon carpeting; rectangular air condi-

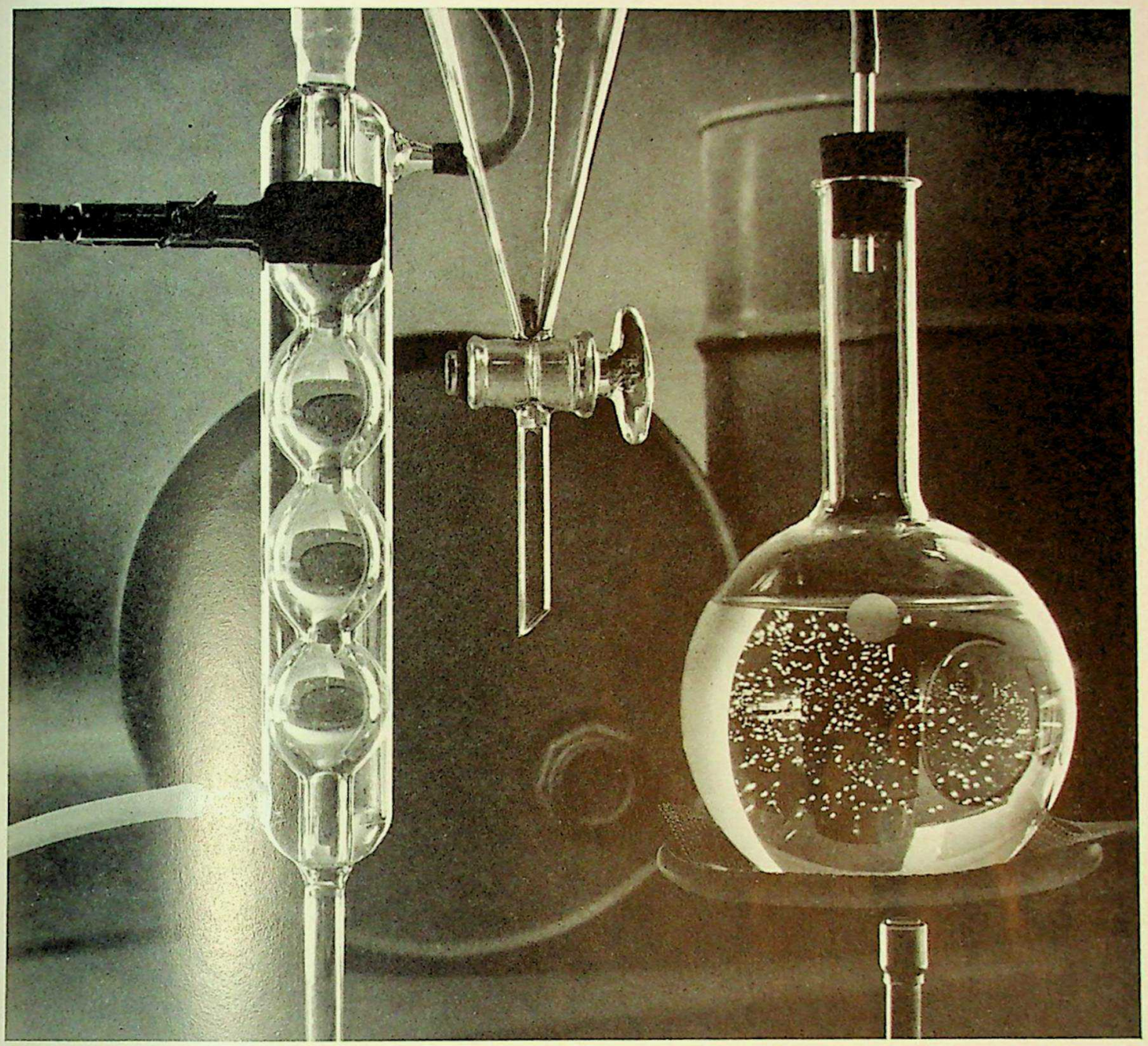
(Continued on Page 114)

★ ★ ★

The 1961 Dart offers three 4-door station wagon models in a choice of 16 exciting new colors. Both six and eight-cylinder engines use regular grades of gasoline.

Six-passenger station wagons are offered in the following series: Seneca Six, Pioneer Six, Seneca V-8 and Pioneer V-8. Nine-passenger station wagons come in the Pioneer Six and Pioneer V-8 series.

★ ★ ★



DRUMS OR RESEARCH . . . WITH GAS For high speed heat to manufacture or dry steel drums . . . for flexible, accurate heat to conduct laboratory tests, natural gas is the answer. And it's the dependable answer for 25,000 other diverse industrial processes including thawing, malleabilizing, sterilizing. It might be your answer, too, if you're searching for clean, instantaneous heat. Investigate how this most economical of all modern fuels is already serving your industry. Call our Industrial Process Analysts at WOodward 5-8000, Ext. 6123.

MICHIGAN CONSOLIDATED GAS COMPANY

So much more for so much less—**GAS** *naturally*

Tune in **"BUSINESS BAROMETER"—WJR,** Monday through Friday—**6:50-7:00 P.M.**

Zinc Used In Auto Die Castings

The use of zinc die castings by the automotive industry has been on the increase for the last 15 years, though subject to year-to-year variation with styling changes.

The majority of the parts, plated with copper, nickel and chromium, serve functional as well as decorative purposes. A few are primarily decorative.

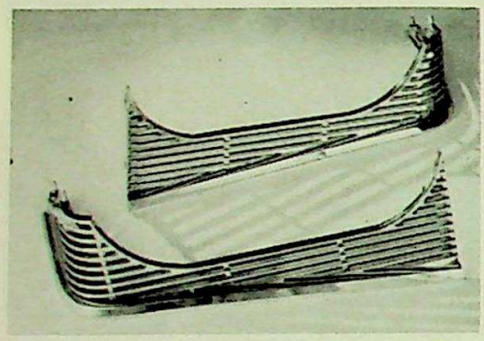
Switch To Zinc

Recent improvements in plating process, to offer greater resistance to corrosion, have contributed largely to a restrengthened position of zinc in use on automotive exteriors. Some car makers who, in the past, have consistently used parts made of other metals, have recently switched to zinc.

The average weight of zinc per car has moved up to some 70 pounds. The compacts use roughly half that amount.

Most conspicuously, the 1960 trend was reflected in front-end grilles. Inside the car, instrument panels and clusters featured the largest and most impressive zinc die castings.

As the use of plated zinc die castings in cars has increased, there has been a tendency to make them larger and more intricate. That this could be done is one of the great assets of zinc die casting and has resulted in overall economy as well as permanence—one part, replacing three or four, does not have the tendency to rattle, nor cost as much to assemble.



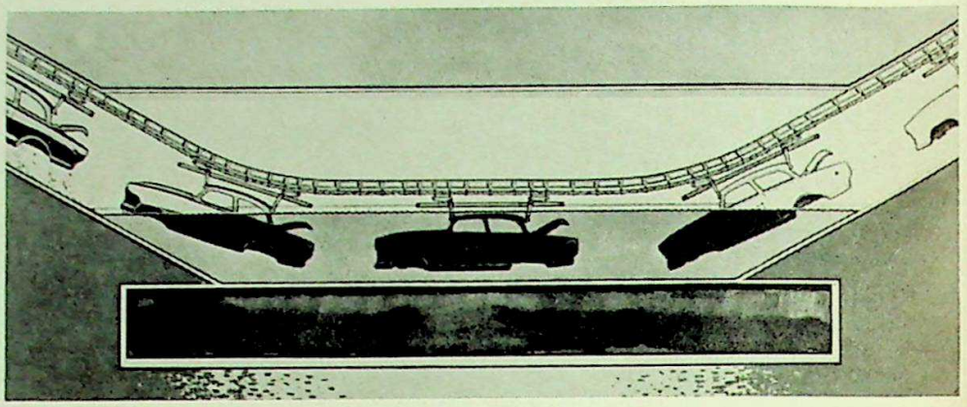
These modern front grille extensions, used by one of the industry's most luxurious car makers, were made from zinc die cast—a metal whose use in automobile manufacture is on the uptrend.

Complicates Plating Problem

This trend, however, has not been an unalloyed blessing, for it complicated the plating problem.

Many of these parts-grilles, trim, window moldings, ornamentation, headlight and taillight housings, handles—serving on the outside of the car, are exposed to corrosive factors. Specifically, the chief enemies are the millions of tons of salt now used annually on the streets of northern cities, and the sharply increased pollution of atmosphere in cities, as industrial activity boomed in the past decade.

The problem of flapping fenders and "eaten through" bodies has worried auto makers and owners alike. Through a combined effort of auto companies, electroplaters and the zinc industry, improved coatings for die castings has been evolved, and promise to increase the use of such castings in the automotive field.



Rambler bodies, after receiving a zinc phosphate coating, are completely submerged in a zinc chromate epoxy primer to impart high rust-inhibition to all surfaces.

Concurrently their efforts turned, also, to an attack on rust. Changes in driving conditions and in car construction, in particular, increased the danger from corrosion. As a result, every auto maker is adopting new, stronger measures to combat it, and zinc in its various forms is one of the major weapons.

The situation became of major concern this year with the swing to unitized construction, a method relying on the welded body to provide much of the strength and ridgidity. So, they turned to galvanized sheet for initial corrosion resistance.

Here the big bugaboo is rust in key areas like sills, rocker panels, and side-rail supports, because their box structures make ideal traps for water and condensation.

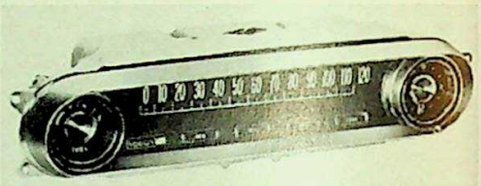
Zinc Fights Corrosion

Most auto makers' first step in rust prevention is a treatment of the cleaned steel surfaces with special zinc phosphate solutions.

Chrysler turned to a six-stage combination spray and immersion process. Since early 1958, American Motors has been completely immersing its Rambler bodies in a zinc chromate primer after applying a zinc phosphate coating.

Zinc chromate primers also are used to advantage in spot areas by some car makers.

Zinc-rich primers, developed in England during World War II, are other types of rust-inhibitors with unusual properties that are used by car makers to fight corrosion.



This smart instrument panel was built around a zinc die casting, as are many of the modern components of today's automobiles. Zinc alloys are not only easy to cast but allow for the greatest complexity of shape, as well as remarkably accurate dimensions.

The extended use of zinc-coated steel sheet for automotive mufflers has contributed significantly to increased zinc demand by the automotive industry.

(Copper-Brass on Page 78)

Title Firm Streamlines Its Operations

In a move to streamline its operations, Lawyers Title Insurance Corporation has completed the liquidation of its Detroit subsidiary company, Abstract & Title Guaranty Company, and four other nationwide subsidiary firms, George C. Rawlings, Lawyers Title president, has announced.

Abstract & Title Guaranty Company in Detroit—the largest of the five subsidiaries to be liquidated—will combine with Lawyers Title's Michigan state organization and the new operation will be known as the Abstract & Title Guaranty Division of Lawyers Title Insurance Corporation. Expanded service will be offered throughout Michigan by branch offices, agencies and approved attorneys.

Frank I. Kennedy, chairman of the board, and Thomas P. Dowd, president of Abstract & Title Guaranty Company, have been elected vice-president of Lawyers Title. Frederick A. Thomson, Lawyers Title vice-president and Michigan state manager, will continue to supervise all Michigan state operations.

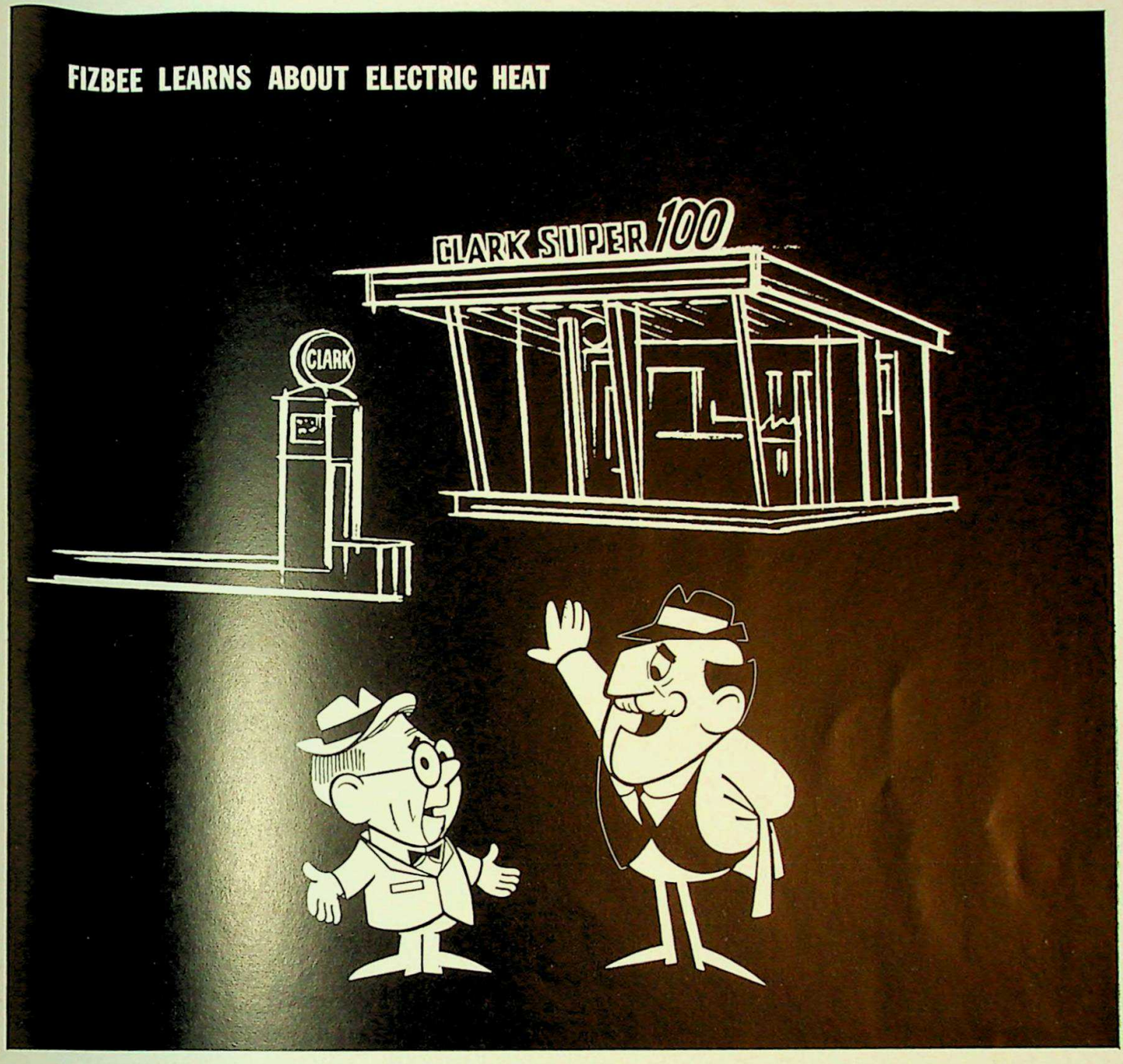
Besides its main office in Detroit, the Abstract & Title Guaranty Company has branch offices in Midland, Mt. Clemens, Pontiac and a wholly-owned subsidiary in Ann Arbor, the Washtenaw Abstract Company.

Lawyers Title, in addition to the Michigan state office in Detroit, has branch offices in five Michigan cities—Flint, Grand Rapids, Mt. Clemens, Pontiac and Royal Oak. These will all become branch office operations of the Abstract & Title Guaranty Division.

BRASS FIRM CHANGES NAME

American Brass Co. of Detroit has changed its name to the Anaconda American Brass Co. It is a wholly-owned subsidiary of the Anaconda Co.

FIZBEE LEARNS ABOUT ELECTRIC HEAT



WHY ARE WE OUT HERE CHIEF? I'M COLD.

NONSENSE, FIZBEE. THIS WAY YOU'LL APPRECIATE THE ELECTRIC HEAT IN THERE. THE SAME WAY I APPRECIATE ITS LOW MAINTENANCE COST IN ALL CLARK STATIONS.

There are nearly one hundred Clark service stations in the Detroit area. All of them keep their occupants warm with efficient electric heat. Built-in units are compact, easy to maintain. They supply uniform comfort and keep the stations nice and clean, too. Electric heat was selected after careful comparison with other heating systems. How does Clark feel about their actual performance? Well, they expect to build more stations here—all with built-in electric heat.

DETROIT EDISON

Copper-Brass Retain Quality Roles

The timeless metals—copper, brass and bronze—still notably pervasive among the quality materials used in the newest models, have been the choice of auto builders from the beginning, in applications where heat transfer, corrosion resistance and electrical conductivity are paramount.

An average of 40-45 pounds of the red metal is used in passenger cars with ordinary accessories, such as radio and heater, while a luxury addition, such as an air conditioner, would add a minimum of 8-12 pounds of copper and brass.

Over 50 Applications

Copper uses, in more than half a hundred applications, range through such key components as radiator, heater, generator, starter, carburetor, water and fuel pumps, oil filters and pumps, lock parts, bearings, body and sheet metal, wiring harness and battery cable.

The compacts contain some 30 to 40 pounds of these traditional standby metals of the automotive industry.

Among vital parts in which copper and its alloys are used, the radiator is the key consumer. A typical 8-cylinder model uses 19 pounds in the radiator core—14 pounds in the six. The heator core takes 5.5 pounds; bearings and bushings, three; generators, 2.25; wiring harness and battery cable, 2.4; and body and sheet metal, 6.5 pounds.

The radiator body represents the largest tonnage of the red metal in car output. From the time of the invention of the "horseless carriage" to the latest model, the radiators of all cars have been made of copper.

Most engineers indicate belief copper and brass remain the best radiator materials because of excellent serviceability, manufacturing economy and ease of workability. This last factor includes good fastening, soldering and machining characteristics, plus the well known heat transfer properties of copper. Experiments have shown the red metal to be superior not only for heat transfer, but for strength as well. High ductility, also, is an important factor in the use of copper for cooling fins in the radiator.

Used In Starter

The self starter motor, which revolutionized the auto years ago by eliminating hand cranking, contains copper wire and other copper parts. The important generator and cooling system thermostat also contains it.

Copper and copper alloys play an important part in the manufacture of instruments. The instrument panel of an automobile is a maze of copper and brass, much of which is often chrome-plated. These panels are a vital part of the car upon which the driver depends for his safety and that of his passengers, as the captain of an ocean liner depends on the equipment on the bridge. Both depend on the oldest of the metals of commerce, proven for their durability by centuries of service.

Headlamps on the first cars were made of brass and today most of them are made of brass with chromium-plated shell.

Our files contain a picture and letter concerning a 1904 Reo, one-lung and chain drive, still going strong when pictured at the Culver City Speedway in spring of 1924. The radiator, pump and all cooling system pipes were of brass and outside of the frame and flywheel, the working gears, etc., were nearly all brass.

Use Of Printed Circuits

Three important advances in the use of copper metals in recent automotive design include the growing use of printed circuits in automotive wiring systems, the increased copper plating for more attractive chrome finishes on cars, and copper's superior heat transfer which provides maximum cooling in minimum space. This latter advantage is most important in the design of radiators that must serve efficiently and yet be compact enough to meet a streamlined pattern.

The printed circuits reduce space requirements by replacing bulky wiring and soldered connections with thin copper foil. Copper's high electrical conductivity maintains the efficiency of the system.

The vibration-resistant printed circuits have proved a boon for automobile radios. One authority says they will be in general use for many other automotive circuits in the years ahead.

Double Copper Plating

In the area of increased plating, an outstanding example of over a year ago was Pontiac's double copper plating applied to all front and rear bumpers. In addition to substantially reducing chrome deterioration, the double copper operation provides an exceptionally lustrous, mirro-bright finish. It provides maximum protection even in areas where rust and corrosion are greatly accelerated by winter road salt or high humidity.

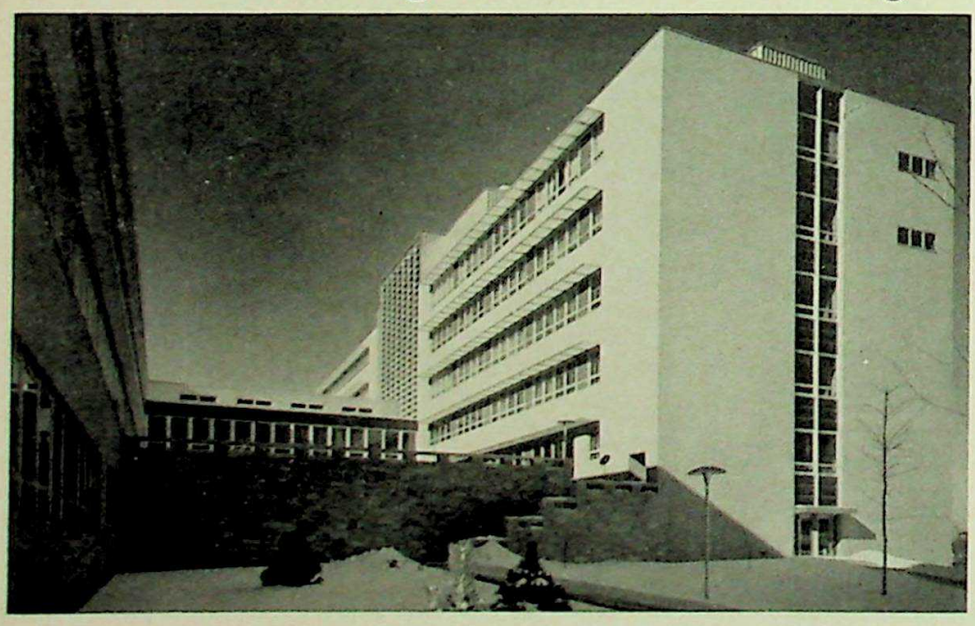
Improved brass mill rolling and drawing techniques have produced lighter gage copper and brass for radiator components so they will operate at maximum efficiency in limited space. Thus, even though car engines have been enlarged through the years, it has not been necessary to appreciably increase the size of the radiator.

It appears generally believed that despite the assaults, and possible future inroads, of other metals on radiator design, copper's superior physical properties will assure its use in this product for many years to come.

One of the more interesting research projects recently inaugurated by the Copper Development Association, Columbus, Ohio, is for the development of a stainless, tarnish-free copper. Should this bring a successful result, which is considered likely, it is anticipated that a considerable amount of additional copper would be used for automotive trim.

(Rubber on Page 80)

Detroit Firm Designed U. of M. Building



Shown here is the major wing of the University of Michigan Medical Science & School of Nursing Building, designed by Giffels & Rossetti, Inc., Detroit architects and engineers. The structure, occupied in 1959, is the largest unit in the Ann Arbor medical center. General contractor was A. Z. Shmina & Sons Company, Dearborn.

The building is formed into a modified "T" by its three wings. This northerly-most east-west wing, containing seven levels, is occupied by the pharmacology and biochemistry departments and the Medical School Administration. The four-level, middle-east-west wing is for the pathology department, while the three-level north-south wing is occupied by the School of Nursing.

DESIGN FIRM EXPANDS

W. B. Ford Design Associates, Inc., Detroit, has expanded its office and facilities in the Citizens Building, 600 Woodward avenue, to accommodate added personnel in the graphic and product design departments. In addition to the entire ninth floor, the firm now occupies part of the eighth floor.

Announcement Time!

. . . . . AGAIN?

YES, NEW AUTOMOBILES ARE NOW ROLLING OFF THE ASSEMBLY LINES AND WITH THEM WILL BE ALL TYPES OF INFORMATIVE LITERATURE . . .

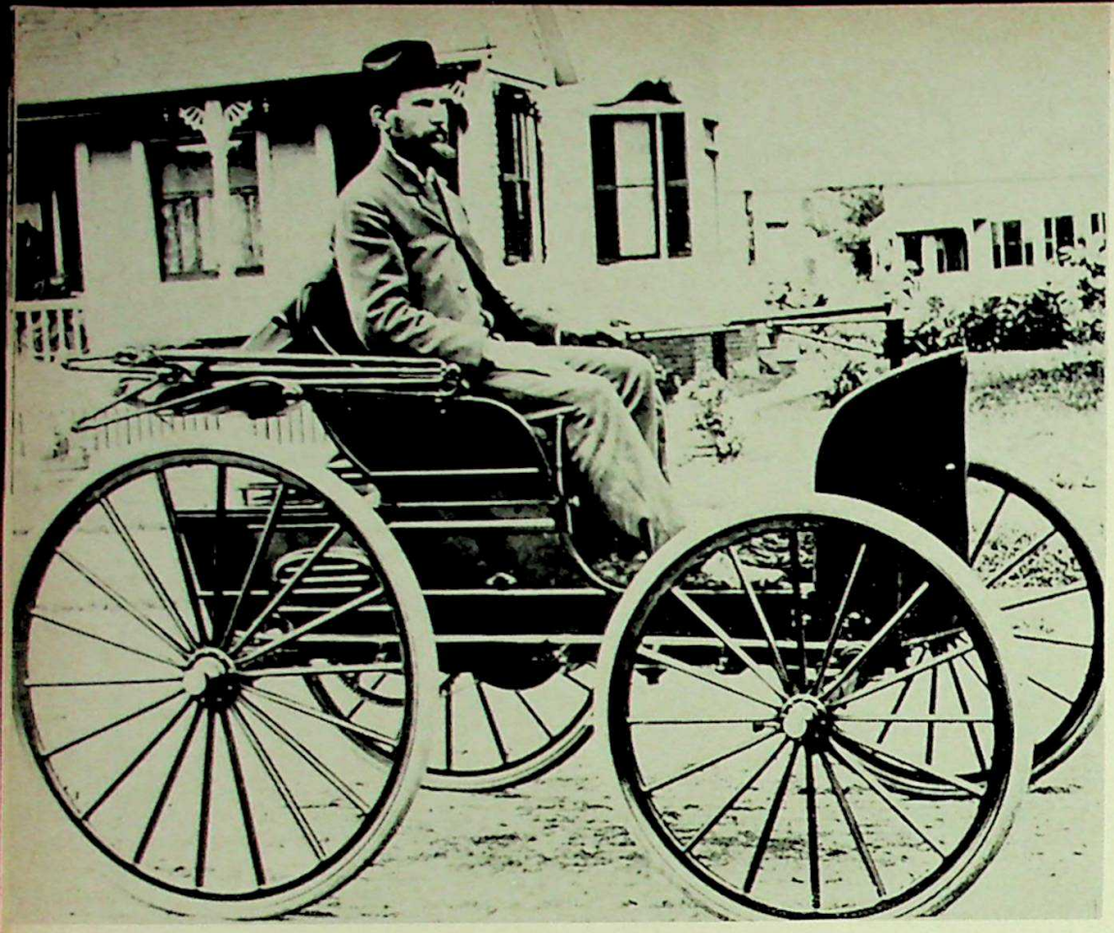
CATALOGS, FLYERS, OWNERS MANUALS, SERVICE MANUALS, SALES PROMOTION MATERIAL, SPECIFICATION SHEETS, ANNOUNCEMENT CARDS, MAILERS AND MANY OTHERS!

THE ANN ARBOR PRESS IS CONSTANTLY GROWING AND EXPANDING TO MEET THE UNUSUAL DEMANDS WHICH FALL UPON BOTH MANUFACTURER AND SUPPLIER AT THIS TIME OF YEAR.

WE HAPPILY WORK DAY AND NIGHT TO MEET THESE IMPORTANT DEADLINES.

Call **WOodward 3-4054** *or* **NOrmandy 2-3145**

THE ANN ARBOR PRESS, INC.
ANN ARBOR, MICHIGAN



★ ★ ★

The first set of pneumatic tires ever used on an automobile were placed in service 65 years ago when Charles Duryea, pioneer auto inventor, shown here, had a set of single tube tires installed on his car, on March 11, 1895.

Made at Hartford Rubber Works, later a part of United States Rubber Co., the new air-inflated tires quickly established their superiority over the solid rubber type.

★ ★ ★

500 Rubber Parts In Today's Car

While rubber plays an important role in every form of transportation, the automotive industry is the largest single customer of rubber products. Of the more than 500 rubber parts produced by the rubber industry, many are as essential to the safety, comfort, convenience and economic service of the modern automobile as tires. For example, safe braking, power steering and air conditioning of today's vehicles would be impossible without rugged, precision-built high pressure hose.

The more than 500 rubber parts in the modern car represent some 375 pounds of its weight.

But the tire is basic—that's what it rolls on—and to the average user the tire is the best known product of the rubber men.

Lower Cost Per Mile

Says the Rubber Manufacturers Association of the modern tire: "It is also a dramatic achievement in design and engineering and is something of a miracle in safety, service and economy. As a result of competition, endless research and development, today's automobile tire gives 40 per cent more mileage and far greater reliability than the tire of only 25 years ago.

"Cost per mile is lower despite heavier demands placed on tires by modern automobiles with their higher speeds, more powerful engines, smaller wheels and punishing braking requirements. These vastly improved tires are a major factor in highway safety."

Constant changes within the rubber industry in the endeavor to produce better tires involve: Materials of construction, design, production equipment, processes and testing and inspection. We will touch briefly on some of these factors below.

The modifications and changes are made to provide: More safety, greater comfort, longer wear, easier handling, quieter ride, and greater uniformity.

New Approaches Used

To accomplish these objectives, new items and approaches are used, such as synthetic fibers, low profile tires, improved compounds and designs, new molds, pre-stressing of tires, soft tread development, new chemicals to resist cracking, precision processing and inspection, snap-on treads, high speed tires, two-ply tires.

Tire engineers have contributed to the overall increase in speed, safety and stability of automobiles. One notably visible evidence is the growth in tire diameters in inverse proportion to the shrinkage in wheel diameters over the years—the latter down from 25 to 20 inches during the 1920s, then reduced successively to 18 inches, to 17, 16 and 15 (by 1947) then since 1956 to 14 (13 for compacts).

As automobile tires and tubes constantly improve in quality and performance, life expectancies rose from 1,000, 2,000, then in bigger jumps to 10,000, to 20,000, 30,000 and recently 50,000 miles—with talk of a 100,000-mile tire in the near future.

Cost $500 Per Set

So tire development has come a long way in the past half century.

The task of keeping air in early pneumatics has been described as "exacting and perpetual" in the memoirs of an early motorist. He reminds us that cost of a tire was between $50 and $60 (size not revealed) and on early big luxury cars a set of tires, without a spare, cost $500.

The driver of 1910 anticipated at least a couple of stops on a 250-mile trip to change tires for punctures or blowouts. That's why he strapped three spares on the back.

By 1915, tire life had been raised to some 3,500 miles and only a couple of spares were needed, as one flat per trip was normal. By 1935, most tires were good for 20,000 miles and one spare was considered enough. (The above figures vary widely—depending apparently on the temperament—optimist or pessimist—of the author of our source material.)

Demountable Rims Bow

Tied to the tire were mounting difficulties. Soon after the automobile came in, manufacturers turned from solid rubber tires to adaptations of the single tube bicycle tire. They soon found they needed a heavier outer tire protecting an inflated inner tube. The method of attachment to the rim caused them to be termed clincher tires. Disgust with this method of attachment (and detachment was worse) resulted in development of the "straight side" tire in the early 1900s, and in 1905 Goodyear brought out a universal tire rim taking either clincher or straight side tires. In 1909, Firestone made demountable rims available on a commercial basis. Their gradual adoption made them universal by 1915.

But, whatever the method of mounting, tire repair meant time, a bruising struggle to remove the tire, and a struggle to get it back on again—all assisted by profanity.

Some relief for motorists came in succeeding years as the tire makers boosted tire life with more rubber thickness and vulcanizing with heavy canvas. But skid-

(Continued on Page 86)

Elected Huron Portland Director

Charles M. Adams, vice-president in charge of operations of Huron Portland Cement Company, with main offices in Detroit, has been elected to the company's board of directors. His election increases the board's membership to six.

C. M. ADAMS

A native of Spokane, Wash., Adams attended the University of Washington and received his degree in civil engineering from the University of Michigan in 1941. He joined Huron Portland in March of that year as assistant superintendent of plants. From 1943 to 1945 he served in the U. S. Navy, and upon his discharge as a lieutenant in the Seabees, returned to Huron Portland as superintendent of plants and vessels on Nov. 1, 1945.

In January, 1954, Adams was named manager of distribution and two years later was promoted to assistant manager of operations. He became vice-president in charge of operations on May 15, 1959.

Continental Is Shorter

(Continued from Page 70)

will be "hot" tested for three hours. At the conclusion, each engine will be torn down, visually inspected and reassembled before it is installed in the car.

Powered by 430 cubic-inch displacement engine, it develops 300 horsepower at 4,100 r.p.m. Compression ratio is 10 to 1. Wheelbase is 123 inches against 131 in 1960; overall length is 212.4 inches against 227.2 inches; overall height 53.5 against 56.7 inches; and overall width, 78.6 against 80.3 inches.

Minimum Of Brightwork

The car has a classical Continental roof with a forward slanting front windshield and a rear slanting back window. A lower hood line slopes into a honeycombed-type grille, which has dual headlamps inset at the outer edges. A low-appearing rear deck is set off by slightly raised rear quarter panels where the taillights are located. A rectangular grille-like treatment extends across the rear of the car. In the center is a Lincoln Continental emblem which conceals the gas lid. Back-up lights and license plate frames are recessed in the bumper.

From the side, the car is outlined in a narrow stainless steel molding, with no additional brightwork.

Entrance into the car is easy because both doors open from the center, and the dogleg has been eliminated.

Twenty-one solid colors are available.

DIRKSEN ADDRESSES MMA

The annual dinner meeting of the Michigan Manufacturers Association will be held in the Hotel Statler-Hilton, Detroit, on Thursday, Oct. 20, with the Hon. Everett M. Dirksen, U.S. Senator from Illinois and minority leader in the Senate, as the speaker.

A GIFT
from
WARREN'S
has a personality all its own

It is traditional that Warren's experienced personnel have always taken a personal interest in each selection, and this interest goes far beyond the purchase. The sales person who serves you sees that your selection is beautifully gift-wrapped. And the name "Charles W. Warren & Company" on the box gives added significance to the gift—to its excellent quality and sound value.

Jewels
Watches
Gold Jewelry
Silver
Steuben Glass
China

CHARLES W. WARREN & COMPANY
JEWELERS AND SILVERSMITHS
STEUBEN GLASS
1520 WASHINGTON BOULEVARD

Detroit 26, Michigan—Telephone WOodward 2-5158—Store Hours—9:30 A.M. to 5 P.M.

★ ★ ★

The 1961 Polara is Dodge's entry in the low - medium - price car market. Shown here is the stylish 4-door hardtop, one of six models in the Polara line for 1961.

Fenders rise slightly just behind the doors, taper downward, and then make a reverse sweep at the rear of the car. The rocket-like tail lights are located within a chrome nacelle mounted in the fender.

★ ★ ★

Polara Offers Luxury At Moderate Price

Dodge's 1961 Polara, which M. C. Patterson, Dodge general manager, describes as the car designed and engineered for the motorist who wants "a car of distinction at a moderate price," made its public bow in dealer showrooms on Sept. 29.

"We are convinced our Polara will be the star of the low-medium-price field," Patterson said. "It has the refinement, quality, performance and style that previously has been available only in the luxury-priced cars."

Available In Six Models

The Polara for 1961 features completely new styling, new interiors, a V-8 engine that performs efficiently on regular grades of gasoline, and engineering improvements that provide performance and ride of unexcelled smoothness and quietness.

The 122-inch wheelbase Polara is available in six models: A 4-door sedan, 2-door hardtop, 4-door hardtop, convertible, and six- and nine-passenger hardtop station wagons.

Overall length of the Polara is 212.4 inches, width of 78.7 inches, and height of 54.9 inches.

Identifying feature of the Polara's new styling theme is its rocket-like tail lights and rear fenders. The fenders rise slightly just behind the doors, taper downward, and then make a reverse sweep at the rear of the car. The rocket-like tail lights are located within a chrome nacelle mounted in the fenders.

New Concave Grille

In front, the Polara has a large, horizontal, concave grille. The hood and front fenders form a cowl for the grille and dual headlights project from its sides. Housings for the parking lights and a recess for the license plate are integrated in the large, wrap-around bumper. In the middle of the grille is a large medallion in the form of a cross, inset with red and mounted on a textured golden background plate.

From the side, the Polara presents a forward-thrusting profile, enhanced by the sculptured fenders, a straight-line windshield post and forward - slanting front wheel openings. A textured aluminum and stainless steel rub-rail extends along the side from the rear of the car to the front wheels.

The 1961 station wagons again feature hardtop styling, with a high rear window which increases glass area by 47 per cent.

Lists Engineering Advancements

Polara buyers are offered a choice of three engines ranging in horsepower from 265 to 330. The Standard engine for the new car is a 265-horsepower, 361-cubic-inch V-8 which delivers effective performance on regular grades of gasoline.

Two high performance engines also are offered—the 325-horsepower D-500 and a 330-horsepower V-8 with special ram induction manifolding. Both have a displacement of 383 cubic inches and a compression ratio of 10 to 1. The D-500 is equipped with a single four-barrel carburetor. The ram induction engine has two 4-barrel carburetors, dual exhausts, a special camshaft, and valve spring dampers.

Uses An Alternator

Like all other Chrysler-built cars for 1961, the Polara has an alternator instead of the conventional direct-current generator.

Other engineering advances in the new Polara include: A new solenoid-shift starter, which brings new silence and reliability to the engines; a new heavy-duty manual, 3-speed transmission; redesigned shock absorbers; precision-balanced tires and wheels; a newly designed, easier - to - operate parking brake; new tires which are quieter and offer 15 per cent more miles-per-tire.

Other features on the 1961 Polara are: Standard Torsion-Aire suspension; Unibody construction with integrated frame and body; advanced silencing, rustproofing and sealing treatments; and factory undercoating which soaks up engine noise.

Wide Range Of Accessories

Cloth and vinyl interiors are available in five colors in the 2-door hardtop and in four colors in the 4-door sedan. All-vinyl trim in four colors is offered in the station wagons and convertible, and in five colors in the 4-door hardtop.

Sixteen exterior colors are available—12 of them completely new for 1961.

The 1961 Polara also offers a wide range of comfort, convenience and safety accessories. Optional equipment includes air conditioning, Sure-Grip differential, push-button operated heater, transistorized radio with rear seat speaker, remote control outside mirror, vacuum door locks, padded instrument panel, seat belts, tinted window glass, rear window defroster, emergency flasher system, auto pilot, and power steering, brakes, seats, window lifts and station wagon tail gate window.

Brunswick Plans Second Muskegon Plant

Brunswick Corporation will more than double manufacturing facilities for bowling products, principally automatic pinsetters, at its Muskegon plant, it has been announced by B. E. Bensinger, president. It was only last June that Brunswick dedicated a new 235,000 square-foot plant at Muskegon, of which 178,000 square feet are devoted to production of bowling equipment.

The additional facility will provide 200,000 square feet, Bensinger said, "which will increase our automatic pinsetter capacity about 75 per cent and also enables us to step up our research and development programs to anticipate market requirements in the foreseeable future."

Demand for bowling equipment this year has exceeded earlier expectations by more than one-third, and the 1961 forecast indicates unabated growth of the sport, Bensinger declared.

Construction of the new plant at Muskegon is slated to begin in October and will be completed about April 1, 1961. Approximately 500 persons are working in the present plant. The new facility may boost employment by an additlional 200, it is indicated.

Until this year, Brunswick's automatic pinsetters were produced by Otis Elevator Co. under an agreement formulated in 1956. Production has been gradually taken over by Brunswick at the new Muskegon plant and by the end of 1960 the entire output is expected to be manufactured by Brunswick.

Cunningham-Limp Company, Detroit. designers, engineers and builders, will serve in these capacities for the new plant. They also handled the original Brunswick pinsetter plant at Muskegon.

Michigan Mutual Promotes Two

H. John Lowry, president of Michigan Mutual Liability Company, Detroit, has announced the advancement of Durlin W. Hickok and Walter O. Miller to assistant vice-presidents of the company, effective as of Oct. 1.

Hickok has been with the company for 23 years, having served in the underwriting and collection departments, and most recently has headed the enlarged statistical department. Miller joined the organization in 1952 as an underwriter, and in 1958 was transferred to the newly organized special risk department.

D. W. HICKOK

W. O. MILLER

McLouth Boosts Steel Capacity By 24%

McLouth Steel Corporation, Detroit, has announced that its annual steel ingot capacity has been increased to 2,530,000 net tons, a gain of more than 24 per cent over the former rated capacity of 2,040,000 net tons. The new capacity results from the completion of the company's recent expansion program.

Croul Joins Detroit Bank

William J. Croul has been appointed an assistant vice-president of The Detroit Bank and Trust Company, and assigned to the development of commercial banking business, it has been announced by Joseph M. Dodge, chairman of the board.

W. J. CROUL

Croul, who has been president and general manager of the Riverside Storage and Cartage Company since 1938, has been elected chairman of that concern and relieved of his executive responsibility.

For ten years, Croul was chairman of the labor negotiating and grievance committee for the Moving Industry in Detroit; was president of the Michigan Movers' and Warehousemen's Association in 1947; and of the National Furniture Warehousemen's Association in 1957. He also has been president of the Movers' Bureau of Detroit, and vice-chairman of the National Moving and Storage Technical Foundation.

OVERLOADING YOUR BEST ASSISTANT?

Possibly... if you're doing more business than your present telephone setup was designed to handle.
Are customers' incoming calls getting through to the right person without delay?
Can you reach people in your organization quickly when you need them?
A survey by one of our Communications Consultants will show you what, if anything, needs to be changed to give you telephone service tailored to your needs. A survey costs you nothing.
It's part of our service to you.
Call your telephone business office today.

MICHIGAN BELL TELEPHONE COMPANY

Shown here is the Rambler Ambassador V-8 Custom four-door sedan for 1961, with its sloping front fender and hood line extending over the aluminum grille, and flanked by bold dual headlights. Wheelbase is 117 inches.

Four versions of the four-door station wagon shown here are offered in Rambler's compact luxury car for 1961—the 117-inch wheelbase Ambassador V-8. Both two and three-seat versions are available in its station wagon series.

Ambassador Offers New Features

The first car to apply the compact concept to the luxury car field, the Rambler Ambassador V-8 was unveiled by American Motors dealers in their showrooms on Oct. 12.

The Ambassador V-8, built on a 117-inch wheelbase, is available in six four-door models, including a Super and Custom sedan, Super and Custom two-seat station wagon, and Super and Custom three-seat station wagon.

Featured in 1961 is a new ceramic-coated muffler and tailpipe, a cushioned, acoustical fiber glass ceiling panel, vacuum powered four-door locking system, a new heating and ventilating system, and a new air conditioning system.

New Aluminum Grille

The Ambassador's styling simplicity is highlighted by a one-piece aluminum grille, flanked by bold dual headlights. The one-piece, wrap-around bumper provides full-width protection. Parking and directional signal lights are located below the bumper in a recessed, protected position.

The sloping front fender and hood line extend over the grille and headlights, accentuated by a chrome molding. The front fender ornaments, mounted along the crease line, flow to a flaring rear fender line.

The new tail-lights are larger for increased visibility, and are contoured to the rear fender line. The rear deck lid is high and flat for maximum trunk space.

Spears on the side panels of the 1961 Ambassador V-8 feature an anodized aluminum inset on Custom models and accent color on Super models.

Panel Reduces Noise

In the interior, a new molded fiber glass ceiling panel replaces the conventional sewn fabric type. It was developed jointly by American Motors' engineering department and Johns-Manville's Fiber Glass Research Center. The panel, which is one-piece on sedans and two-piece on station wagons, is designed to muffle noise and vibration. It is stain resistant, fireproof and waterproof.

The all-new vacuum powered four-door locking system incorporates servo units in each door controlled by an on-off switch located on the underside of the instrument panel.

The heater and air conditioning panel have been redesigned to simplify operation. New air vent controls are located below the instrument panel on the left and right sides.

Redesigned front seats provide improved air circulation to the rear-seat passengers.

The well known Rambler reclining seat and twin-bed combination is standard on Custom models, optional on Supers.

Wide Choice of Colors

Fifteen baked super-enamel solid colors with 26 two-tone combinations are offered on the 1961 models.

The ceramic-armored muffler and tailpipe, standard on all Ambassador models, is a ceramic coating fused to the muffler and tail pipe at a temperature of 1,500 degrees, Fahrenheit. It is resistant to acids and other corrosive condensates which collect in mufflers and tailpipes. AM will guarantee the life of the ceramic-armored units to the original owner as long as he owns the car.

The Ambassador's 250-horsepower V-8 engine is equipped with a twin-barrel carburetor. It has a compression ratio of 8.7 to 1, a displacement of 327 cubic inches, and a bore and stroke of 4 x 3¼ inches. It operates on regular grade gasoline.

Three Transmissions Available

Offered as optional equipment is a 270-horsepower V-8 engine featuring a four-barrel carburetor, a compression ratio of 9.7 to 1, and a dual exhaust system.

Three transmissions are available on the Ambassador. Flash-O-Matic automatic transmission, operated by a push-button system, is offered as optional equipment. Optional overdrive and syncromesh also are offered.

Uses Captive-Air Tires

The front shock absorbers are redesigned to incorporate a rebound hydraulic cut-off system for improved ride control. It eliminates the separate rebound bumpers and brackets, thus permitting more wheel travel over bumps. It substantially lessens "bottoming" from severe bumps.

Captive-Air tires, in sets of four, are standard on three-seat station wagons, and optional, in sets of four or five, on other models.

Like all Rambler cars, the Ambassador employs such well known features as single-unit construction, deep-dip rust-proofing paint primer, and the Weather Eye heating and ventilating system.

Power steering, power brakes, power-lift windows, "Twin-Grip differential, Solex glass, and Powr-Saver Fan are optional on all models.

Directs Firm's Three Divisions

Samuel E. MacArthur has been promoted to the position of executive assistant to the president and treasurer of Federal-Mogul-Bower Bearings, Inc., Detroit, with direct responsibility for three of the company's seven divisions.

S. E. MacARTHUR

In his new capacity, MacArthur will supervise operations of the National Seal, Arrowhead and Microtech divisions, with five manufacturing plants in California and Ohio. He also will continue his present responsibilities as treasurer and director of the company.

MacArthur has been with Federal-Mogul-Bower for 18 years and has acted as vice-president-finance and treasurer since 1959. From his original position as assistant controller, he was promoted to controller in 1945, treasurer in 1952, and a director in 1953.

Celotex Officially Opens L'Anse Plant

Upper Michigan's largest new industry, a Celotex Corporation insulating fiberboard plant at L'Anse, was officially opened on Sept. 23. The event was marked by a meeting of the Celotex board of directors, and the first official inspection of the 260,000 square-foot plant by company officers.

The plant will employ about 150 persons when operating at full capacity. An additional 300 to 500 woodsmen will be employed by private contractors in logging operations. The new plant will use up to 175 tons of wood daily for the manufacture of 500,000 square feet of half-inch fiberboard.

Celotex owns 185,000 acres of forest land in Baraga and surrounding counties, and has perpetual timber cutting rights to an additional 57,000 acres.

★ ★ ★

Shown here is the 1961 Imperial with the classic look featuring free standing headlamps—the first time in nearly a quarter century that this type of lamp has appeared on an American production car.

The car as a whole carries forward traditional Imperial design features. Rear panels are extended to sharpen the impression of length and directed motion.

★ ★ ★

1961 Imperial Stresses Classic Styling

A newly-styled 1961 Imperial, featuring twin free-standing headlamps, was placed on display in Chrysler dealer showrooms late in September, with C. E. Briggs, corporate vice-president and general manager of the Chrysler and Imperial Division, Chrysler Corporation, declaring "we expect 1961 to be a good year for full size luxury cars."

Retain Styling Identity

The distinctive chromed lamps are completely removed from fender and coachwork metal and mark the first time in nearly a quarter of a century that this type of lamp appears on an American production automobile.

The 1961 Imperials, although different in appearance from their 1960 predecessors, retain much of the styling identity established with the introduction of the modern version of the Imperial in 1957 and carried forward in subsequent models.

The new models are fully as powerful and roomy as previous Imperials. The engine is rated at 350-horsepower; wheelbase is 129 inches—both unchanged from 1960.

As in 1960, the Imperial line includes a LeBaron 4-door hardtop with limousine styled rear window and canopied effect in the roof which gives a town car appearance.

In the Imperial Crown Series, there is a 4-door hardtop, a 2-door hardtop and a convertible. In the lower-priced Custom Series, there is a 4-door hardtop and a 2-door hardtop.

Thirteen exterior colors are offered for 1961, ten of them new this year.

Better Corrosion Protection

Mechanical improvements include an alternator as standard equipment for improved battery charging at low engine speeds; carburetor improvements and refinements in the electrical system, steering gear, brakes and suspension. There is a new electrically operated windshield washer which sends four high-pressure jets of washer fluid against the windshield.

Improved body corrosion prevention techniques have been added in a three-

(Continued on Page 102)

KOESTLIN TOOL & DIE CORP.

3601 HUMBOLDT AVENUE

DETROIT 8, MICHIGAN

PHONE: TASHMOO 5-1490

•

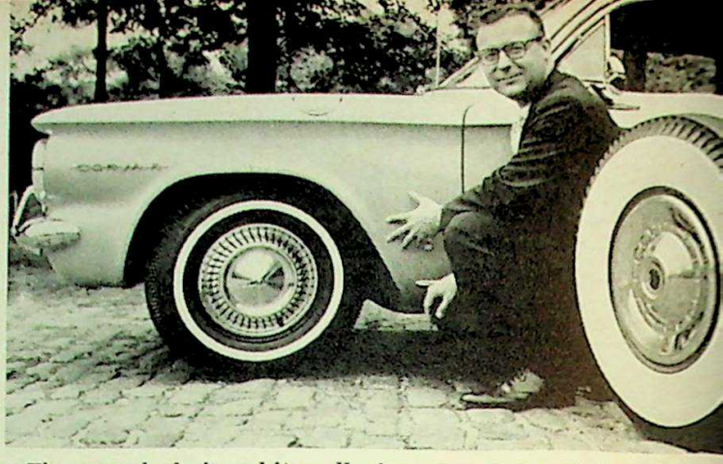
QUALITY AUTOMOTIVE DIES OF ANY SIZE UP TO

EIGHTY TONS

•

BROCHURE UPON REQUEST

In 1917, a driver needed 20 tires to go the same distance as the modern driver covers with his four original tires. Life expectancy of a typical 1917 tire was 6,000 miles; tire cost was $21 per thousand miles on the old Pierce (right). Life expectancy now is over 35,000 miles for a typical tire; cost has shrunk to $5 per thousand miles.



The new look in whitewalls introduced by United States Rubber Co. is shown on this Chevrolet Corvair Monza coupe. John W. Lynch, manager of U.S. Royal passenger tires, shows contrast between the new tire and old style four-and-a-half-inch whitewall that was the widest the industry ever had. Tire on car is a 13-inch; old tire is a 15-inch style.

Non-Skid Tires Appear

(Continued from Page 80)

ding on wet pavement was still a problem so tire makers brought out tires with corrugated treads. The "non-skid" design was put on the market in 1908 and discontinued in the 1920s.

Balloon Tires Arrive

In 1913, strength was added to the tire through introduction of the new Silvertown cord (named for a town in England), the tire being built in several plies, to match the strength and flexibility of a newly developed British cord at lower production costs.

But a real step forward was coming. In 1922 balloon tires, depression products, were introduced. Tire pressures were thereby reduced from around 60 to below 30 pounds, and the old clincher tire was sent into oblivion. Another result was a final push to put solid rubber tires, still used on trucks, on the toboggan and bring a revolution in commercial transport. Although a pneumatic truck tire had been developed in 1916, trucks for years continued to roll on solids, with maximum speeds around 15 to 20 miles per hour, so the rubber wouldn't burn off. With balloons, the removable rims made their exit also.

This put tire makers on the road to adoption of the "low pressure" tire in later years—about 1932—for less wear and tear on car and passengers alike.

In 1935, the first rayon tire yarn was introduced to the tire industry by duPont. Cotton cord previously had the monopoly. In 1941, a somewhat stronger rayon yarn was introduced and the decline of cotton cord in tire carcasses was assured.

Cord—Vital Safety Factor

The choice of cord is of interest to the car buyer for, although unseen, it is vital to safety. The strength of the cord, which holds the tire together—like a girdle on a dame—determines the tire's strength. Woven loosely into a fabric, and coated and impregnated with rubber, the cords form thin sheets, or plies. Four plies, each placed at an angle—it was six in the days of cotton cords—together form the cord body. To this carcass the rubber tread and/or sidewalls are molded.

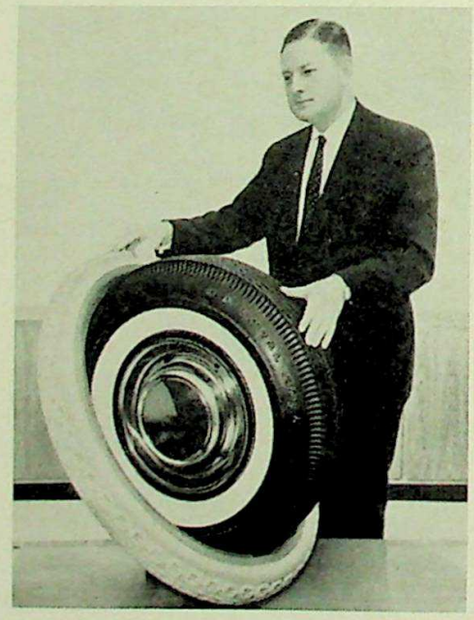
While still further developments in tire cord were brewing, tire progress was marked by the introduction of the tubeless tire by Goodrich in 1948, and their growing acceptance until they were adopted on 1955 models. The rapid changeover was attributed to better performance. Observers now believe it inevitable that within a few years the tube-type tires for passenger cars will be practically extinct.

Over the years there has been a constant variation of tread design, but compromise marks them all. An industrial designer revealed tread design "philosophy" in a recent interview (Detroit Free Press-July 10).

Laboratory Is Battleground

In sum, tire design as regards treads is half scientific and half aesthetic. Tire performance is affected by every element in design. Each component of tire performance—ride, traction, wear, quietness and stability—is affected in a different way.

The designer pointed out that the ideal tire for steering would have grooves around the circumference only—to prevent sideslip. Designs with lateral grooves only would provide traction—for braking and acceleration. If it's quietness you want, have a tire tread with no pattern at all. Hence the compromise. The grooves around a tire permit flexing of the surface and help to dissipate heat.



G. Raymond Cuthbertson, vice-president and general manager of the tire division, United States Rubber Co., stands with a 14-inch U.S. Royal Safety 8 tire which fits into a U.S. chain tire—vintage of 1915. The old timer, 34 by 4, was made before carbon black came into use as a rubber reinforcing agent.

For the present, the chief battleground in competition for tire improvement appears to be the laboratory because the claims and counter claims involve respective merits of nylon and rayon, with several other man-made fibers challenging their role as successors to cotton.

After 1954, the next forward step with rayon was duPont's introduction in 1956 of the first of what the trade calls super-super high tenacity rayon yarns—60 per cent stronger than those first rayons of 1935. These new super-supers are the same strength and quality as yarns now being marketed under the Tyrex label. All "Super-Cordura" rayon yarn produced for tire cord by duPont is of this improved type.

Resistant To Heat

While rayon was being strengthened in quality and competitive position, nylon was being processed for tires. Its first use to reinforce tires was in 1940 in development of tires for the armed forces. This first tire nylon had a strength double that of rayon yarns then in use—in fact in 1940 it was stronger than the best of the high tenacity rayons in use today.

Moreover, the strength of nylon yarn has been increased over the years, and now is more than three times the strength of the 1935 yarn.

Tests conducted by duPont research over a number of years are cited to prove that the strength advantages of nylon over rayon as well as nylon's advantages in resistance to heat and moisture damage can be imparted to tires. They say these fundamental yarn advantages are borne out by both laboratory and on-the-road tests of nylon cord tires.

Superior Characteristics

Tests since 1955 are held to show nylon cord tires superior in the following performance characteristics.

(1) Bruise resistance; (2) flex fatigue resistance; (3) heat resistance; (4) moisture resistance; and (5) high-speed performance.

This is what the yarn producers say. How does the market view it? In the decade since nylon intruded it has moved up

(Continued on Page 88)

• On Michigan's Industrial Front •

Managements of **Kelsey-Hayes Company**, Detroit, and Gunite Foundries Corporation, of Rockford, Ill., have reached an agreement whereby Kelsey-Hayes will acquire Gunite. The agreement is subject to approval by directors of both firms. Gunite produces heavy commercial steel castings, and cast steel wheels and iron drums.

★ ★ ★

Bemis Brothers Bag Company has announced plans to build a 50,000 square-foot manufacturing plant in suburban Norton township (Muskegon), providing new jobs for 50 to 60 persons initially. The firm makes paper bags and flexible packaging. It plans to transfer its Techmold Division operations to Muskegon from Minneapolis when the new plant is ready in December.

★ ★ ★

Duffy-Mott Co., Inc., a New York processing company, will build a plant at South Haven to make apple products, fruit drinks, jams and jellies, with anticipated employment of 250 persons. The company has agreed to buy a 191-acre site and is negotiating for 21 more acres.

★ ★ ★

Kawneer Company, Niles, has acquired certain selected assets of the Sun Valley sliding door line as manufactured by Sun Valley Industries, Inc., of Los Angeles. Manufacture of the sliding door line will be transferred to the Kawneer plant at Niles, but sales will continued to be handled by the present Sun Valley sales organization.

Studebaker-Packard Corporation has purchased the **Clarke Floor Machine Company**, Muskegon, leading manufacturer of floor maintenance equipment, including floor polishers, scrubbers, power and hand sanders, industrial vacuum cleaners and power sweepers. Clarke had sales of over $9,000,000 in 1959. The former Clarke management, headed by Ernest Cooper, president, will continue to operate the company as a division of Studebaker-Packard.

★ ★ ★

Westinghouse Air Brake Co., Pittsburgh, has purchased the assets and business of **Petch Manufacturing Co.** and **Petch Industries, Inc.**, both of Alpena. The Michigan firms, manufacturers of machine tool quality pneumatic and hydraulic cylinders, fluid power control panels and aircraft flight control units, will be operated by the Industrial Products Division of Wabco.

★ ★ ★

Michigan Advertising Distributing Co. has opened its new Western Michigan office and production plant at 3015 Division South, Grand Rapids. It is Madco's seventh such facility, five of them being in Michigan. Main office and plant is in Detroit.

★ ★ ★

Stockholders of the **National Finance Co.**, Detroit, have approved terms of a merger with Liberty Loan Co., of St. Louis. Main offices and 33 branch offices of National Finance will be joined with Liberty Loan's 322 offices.

Homer Foundry Corp., Coldwater, has acquired the operations, part of the machinery and equipment, and some of the personnel of the **Ideal Furnace Co.**, of Milan, and has transferred the latter's operations to the Coldwater plant.

★ ★ ★

A new firm, **Chem-Pharm International, Inc.**, to design, develop and manufacture semi-automatic and fully-automatic processing equipment for fine chemical, pharmaceutical and beverage industries, has been formed in Detroit. It has offices at 16022 Morang road. Ralph T. Kirchner is president.

★ ★ ★

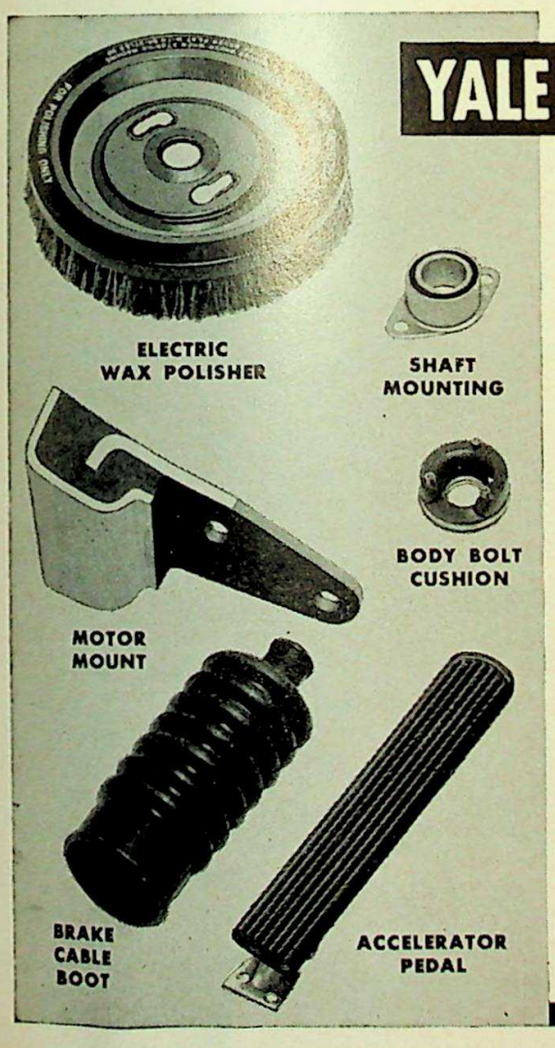
Mercury Tool & Die, Inc., Ferndale, has been sold to a group of Midwest industrialists who are principal stockholders of Pheoll Manufacturing Co., Inc., Chicago. The firm will continue its operations in Ferndale with George Fischer, former president, as vice-president and general manager.

★ ★ ★

Ida Products Co., now located at 1909 East Forest, Detroit, has purchased the old Briggs Manufacturing Co. plant at Jos. Campau and Miller avenues in Hamtramck. The company, which manufactures aluminum window and door frames, will occupy the plant within the next two months after extensive remodeling. It will occupy about 200,000 square feet of the 544,000 square feet of floor space available, and will lease the balance.

★ ★ ★

Charles J. Weigel, Inc., Detroit, a producer of specialty products for the printing ink industry, has been acquired by the Chemetron Corp., and will be operated by its former management as a part of Chemetron's Chemical Products Division.



YALE RUBBER MANUFACTURING CO.

Precision Rubber Engineers

Specializing in Extruded and Molded Rubber Parts

Our special equipment and highly skilled personnel are geared to do outstanding jobs on small run and volume application. Many "seemingly-impossible-to-solve" problems of bonding rubber to metal, have been engineered and produced successfully by Yale Rubber Specialists.

We supply a wide cross section of the major industries with molded and extruded products, oil seals and rubber bonded parts. Complete mold and die shops are part of our facilities. Engineering through shipping from one source is a definite advantage we offer.

The Yale Engineering Staff is at Your Service

Specialists to help with your costs, design modification, reduction of tooling costs and the improvement of your competitive position . . . Our plane is available to speed personnel to and from our factories for urgent requirements. Your inquiry will receive prompt attention.

Yale Rubber Manufacturing Co.

SANDUSKY, MICHIGAN • OFFICES IN PRINCIPAL CITIES

New Tire Fabrics Emerge

(Continued from Page 86)

to currently represent one out of every three tires of all types and roughly 40 per cent of all replacement tires against 10 per cent of replacements in 1955.

Nevertheless, rayon cord tires have been used for practically all original equipment tires by auto makers since the fabric displaced cotton in the 1940s, despite the intensified efforts of the nylon producers to score in this big segment of the tire market. Auto makers still seem reluctant to switch to nylon on original equipment.

While these fibers battle for supremacy, their efforts may be overshadowed soon as new tire fabrics emerge.

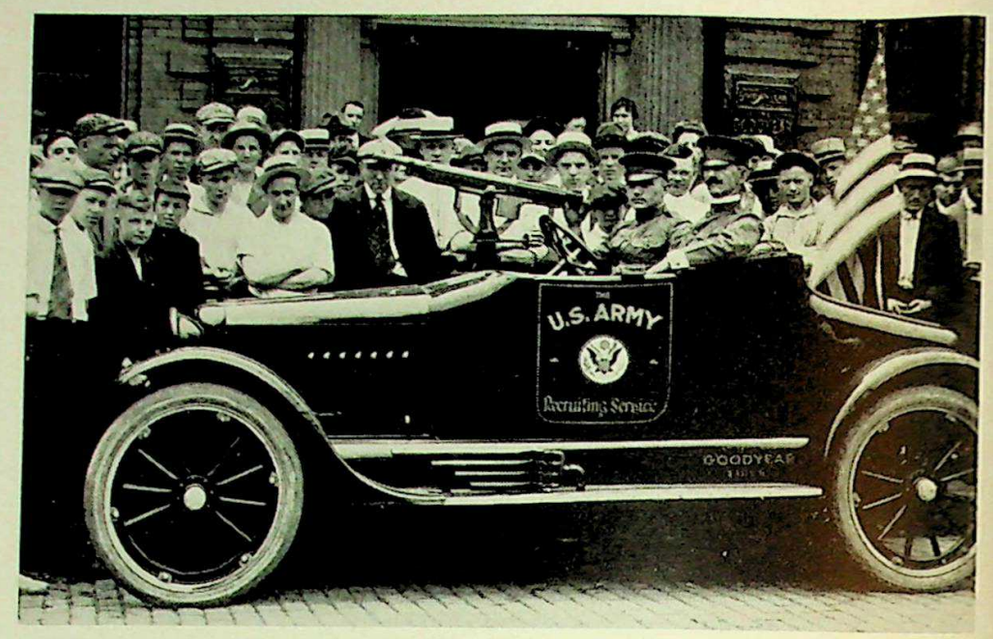
New Fibers Coming

Press reports this summer revealed a number of the newer synthetic fibers—dacron and vinyl drew particular mention, and are being evaluated and used in tires on an experimental basis. Tire industry leaders claim the new fibers show much promise for future use. One fiber, for example, would build much greater heat resistance into a tire.

Should the tests prove out, the mid-sixties might see the tires with the new cords in commercial competition with nylon and rayon—or viscose Tyrex. The latter is a new glamor name for a much improved version of rayon, brought out last year by five rayon producers, aroused by steady losses to nylon.

Turning from cord to rubber, let's consider briefly several significant advances made recently in tire manufacture. Most tires, by the way, now are composed of about 65 per cent man-made rubber and give three times the wear of their counterparts of a generation ago.

One recent development has been an improved "puncture - proof" passenger tire that provides a much tighter seal around puncturing objects than heretofore possible. As regards tires made of various man-made rubbers, styrene-butadiene synthetic rubber was the base of most tires manufactured in the late 1950s. But 1959 saw the introduction of tires made of new man-made rubbers, including butyl and polyisoprene.



Back in 1917, when this picture was taken in front of the Goodyear office building in Akron, tires were much smaller in tread but larger in circumference. The Army officers also would have considerably more difficulty changing their tires than they would on today's modern cars.

Duplicates Natural Rubber

Butyl rubber has special properties, such as impermeability to air, and resistance to weather and abrasion. Tires manufactured from this rubber reportedly are able to turn corners without squealing and stop faster on wet pavements, Butyl for passenger tire casings was first made available in 1959, although it has been used for many years in tubes.

Polyisoprene was commercially introduced in 1959 in truck tires. Said to be competitive in price and quality with the best grade of natural rubber, it has been described as a man-made duplicate of tree-grown rubber.

In looking to the future, we remember that early this year one tire company executive said 100 mile-per-hour speed may be commonplace within the next decade and that research, development and testing goes on to produce tires safe to operate at high speeds. He forecast the tire of the future would be much lighter, thinner, stronger and more durable than present day tires and that it would be air-conditioned.

To Air-Condition Tires

Air-conditioning, he said, would stabilize pressure and temperature so the tire would always run under conditions for which it was designed, and differences in loads, speeds and air temperatures would no longer affect tire performance. Heat will virtually be eliminated as a factor now causing tire wear, hard ride, tire fatigue and failure, he said.

Both start and stop power and wear resistance will be multiplied several times through the use of vastly stronger materials which will not deteriorate with flexing or age.

Upcoming, possibly as early as the 1962 model year, is the two-ply tire, in use on some of the smaller and lighter cars in Europe for some eight years.

A number of advantages in the two-ply for motorists are seen by tire engineers, once the problems in development for use on American cars are solved. Proponents of this type say it will provide a softer, more luxuriant ride, and that it will become the nearest to the perfectly round tire and offer more perfect balance.

Two-Ply Tires Indicated

Its thinner walls will reduce heat build-up and speed heat dissipation, an

(Continued on Page 92)

UNITED STATES RUBBER FIRSTS

1895—Developed first pneumatic auto tire—spurring development and refinement of suspension systems.

1911—Developed first pneumatic truck tire.

1921—Announced many improvements in synthetic rubber.

1934—Foam rubber developed.

1937—First rayon tire cord in tires.

1941—Developed first butyl rubber tire.

1946—Developed extra low pressure tire.

1949—Developed protection rib for whitewalls.

1954—Initiated narrow whitewall—now down to 85/100 of an inch.

1957—Initiated regular butyl tire production.

1958—Announced pressure tempering of nylon passenger tires.

1958—Developed low profile tire—oval in cross section—wider than it is high.

1958—Introduced "Air Guard" rubber powder puncture sealant for tubeless passenger tires.

1958—First commercial production of truck tires of polyisoprene rubber — man-made duplicate of tree-grown rubber.

FIRESTONE FIRSTS

1904—Developed first mechanically fastened, straight - side pneumatic automobile tire — introduced 1905.

1906—Introduced universal rim — accommodated either straight - side or clincher.

1907—Developed first commercial demountable rim.

1908—Introduced first angular non-skid tread.

1920—Perfected method of insulating tire cords against internal heat by "Gum-Dipping" process.

1922—Developed industry's first low pressure balloon tire — introduced in 1923.

1932—Developed and produced first practical low-pressure tractor tire.

1939—Began manufacture of Buna-S (synthetic rubber) tires — first synthetic used extensively for tire production.

1941—Developed first channel tread for airplane tires.

1959—Announced new man-made rubber—Coral.

1958—Revealed Diene—new man-made rubber, a partial replacement for natural rubber.

1959—Announce development of completely new three-piece tire mold — replacing traditional three-piece equipment — for more accurate, precision molding.

1960—Revealed development of single truck tire to replace duals on tractor-trailer rigs.

★ ★ ★

This is the Studebaker Hawk for 1961 —a five-passenger sports car with classic continental body lines. New features include bucket seats, redesigned fins, all-new exterior colors and interior trim, new deluxe steering wheel and bonded brake linings. A new Hawk option is a four-speed transmission with floor shift. Exclusive Hawk options are tachometers and deck lid mounted radio antennas.

★ ★ ★

Studebaker Hawk Retains Classic Styling

The Studebaker Hawk, retaining its classic sports car styling for 1961, has added bucket seats and a four-speed transmission with floor shift among the refinements incorporated into its new line of cars.

All new exterior body colors and interior trims for 1961 add to the Hawk's eye appeal. Dual exhausts are standard equipment.

Bonded Brakes Standard

The 289 cubic-inch power plant develops 210 horse power at 4,500 r.p.m. with a torque rating of 300 at 2,800 r.p.m. With optional four-barrel carburetor, the engine develops 225 horsepower at 4,500 r.p.m., with torque rating of 305 at 3,000 r.p.m. Compression ratio is 8.8 to 1. The engine operates on regular octane gasoline.

Three horizontal stripes emphasize the low, streamlined design of the rear fins. A newly-designed steering wheel and changes in the inner door panel trim are other interior attractions. Moldings for the windshield, windows and on the fenders above the wheels are chrome-plated stainless steel.

Bonded brake linings are standard on the 1961 Hawks. They not only increase brake lining areas, but result in approximately a 75 per cent increase in lining life. Finned, weatherseal-type brake drums, offering the advantages of rapid cooling, are standard on Hawks.

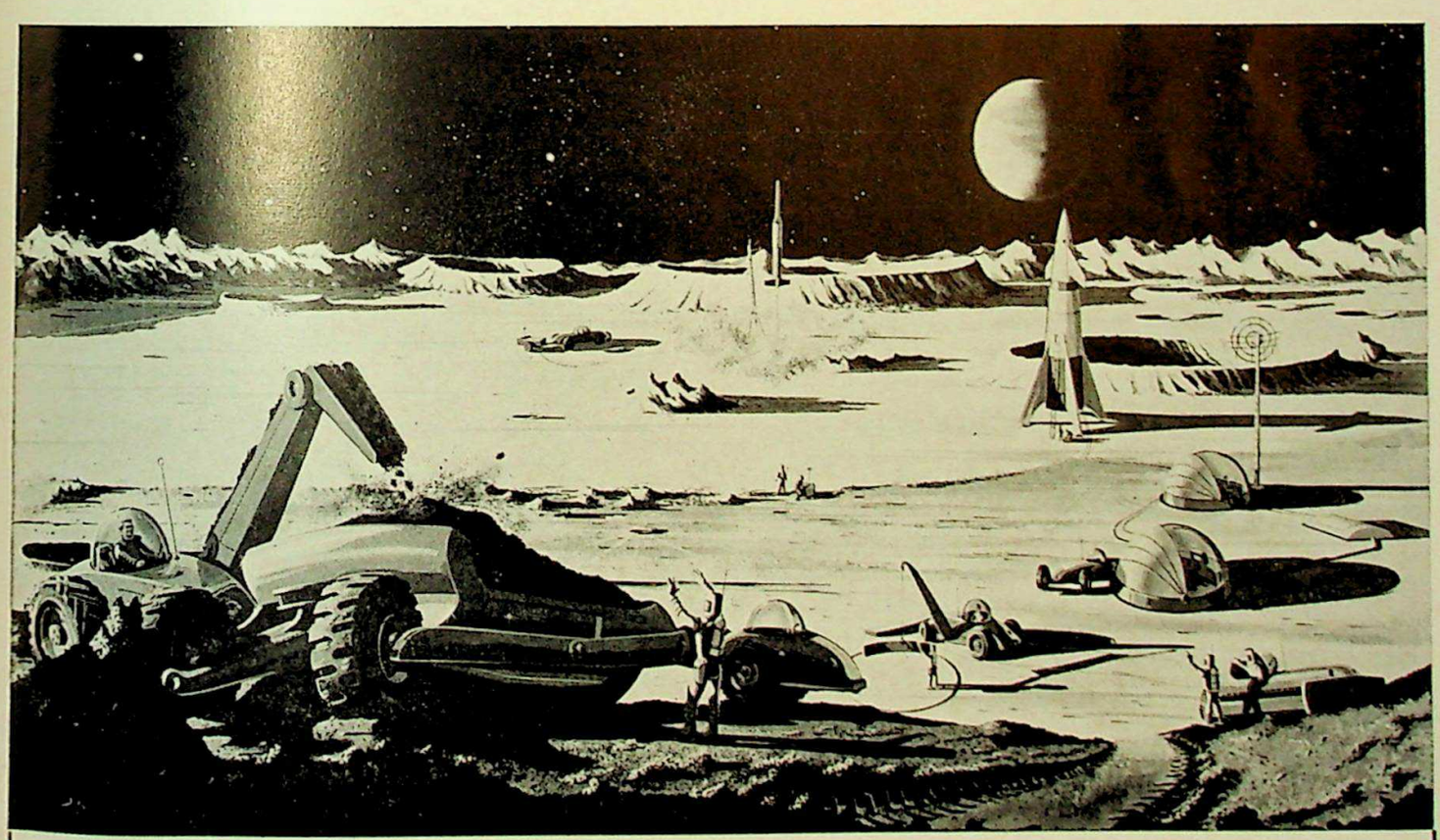
Other standard Hawk features include a padded instrument panel, heavy duty transmission, a 10½-inch clutch, heavy duty radiator, and rugged box section ladder-type frames with road-proved torsional and beam strength.

In addition to the new optional four-speed transmission with floor shift, Hawks are available with either standard, overdrive or automatic transmission.

120.5-Inch Wheelbase

Optional features include power brakes, power steering, air conditioning, limited-slip differential, and the automatic hill holder for cars with conventional or overdrive transmissions.

The Hawk's 204-inch-long body is mounted on a wheelbase of 120.5 inches. Its overall height is 55.5 inches.



American Brakeblok

P. O. BOX 21, BIRMINGHAM, MICH

YESTERDAY...TODAY...TOMORROW

WE STOP THEM ALL SAFELY

All De Sotos for 1961 will be hardtop models. Here is the four-door hardtop model. It has a wheelbase of 122 inches.

This 1961 De Soto two-door hardtop, with its sweeping fins and smooth, low lines, has a streamlined look of motion.

De Soto Limits Output To Hardtops

Emphasizing quality, the 1961 De Soto line, embracing a four-door hardtop and a two-door hardtop, went on display in dealer showrooms on Oct. 14. While the established engineering and styling elements such as single unit construction, torsion bar suspension, and the finned look have been retained, there have been some interesting developments under the hood in the 1961 De Sotos, along with many subtle refinements and improvements.

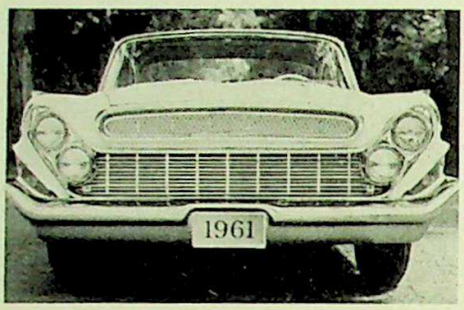
The 1961 De Soto operates on regular gasoline. The 361 cubic-inch V-8 engine that is standard in all De Sotos for 1961 has a 9 to 1 compression ratio with a horsepower rating of 265. By lowering the compression ratio from 10 to 1, engineers have given the 1961 models a more economic power plant.

Features Alternator

The Torqueflite 3-speed transmission, available on all models, increases gas savings and performance. The engine also features an alternator in place of the conventional direct-current generator, which contributes to longer battery life.

Limiting its 1961 offering to but two models, a 4-door hardtop and a 2-door hardtop, De Soto has retained its sweeping fins. Canted headlights frame a horizontal grille topped by a distinctive air scoop. The sides are clean with one spear of molding running the length of the car. The sculptured fins begin at the front doors and sweep back to balance the gently curving rear deck.

The windshield slants straight up to the roof line, eliminating distortion caused by a curved upper edge, yet the glass occupies the same spacious area as in 1960 models. A new roof design on the four-door model features twin speed lines from front to rear.



Classic front end treatment of the 1961 De Soto cars is apparent in this front view shot.

Lists 1961 Improvements

The bright interior tones of blue, silver and red are keyed to De Soto's 13 basic exterior colors, which in turn provide 32 color combinations.

A roster of improvements on the 1961 model include new material to be used in interior fabrics and floor covering; carburetor; steering system; and distributor.

Refinements in design have been made on the speedometer, electric windshield washers, carburetor, under hood silencing pad, shock absorbers, manual and power steering, and parking brake.

Offers Specialty Steels At Warehouses

A program for marketing a new family of high strength, heat-treated steels through a nationwide network of independent steel service centers has been announced by Great Lakes Steel Corporation, Detroit-headquartered division of National Steel Corporation.

Involving only the new family of "specialty" steels, the move marks the first time Great Lakes Steel products ever have been made available for national distribution through warehouse outlets. Warehouses distribute more than 20 per cent of all steel production.

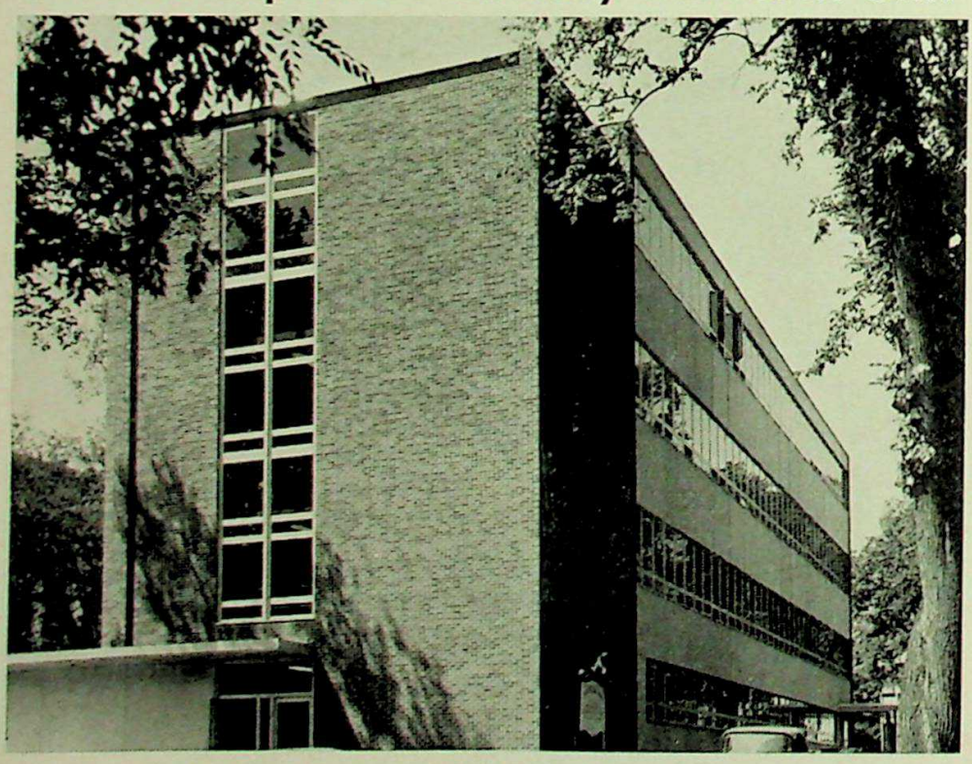
Production schedules for the new family of steels have just been doubled to supply customer requirements already generated by 18 months of test-marketing, according to Wilfred D. MacDonnell, GLS president.

"User acceptance of these specialty steels has moved Great Lakes Steel into new non-automotive and additional automotive markets, and contributes importantly to our mill operations currently being at a level substantially above the steel industry average," MacDonnell said.

"Establishing nationwide steel center representation for these steels is another step in a continuing program to broaden Great Lakes Steel's market coverage beyond a historic midwestern base," he explained.

Available in a wide choice of constructional or abrasion-resistant grades in strength levels up to 200,000 PSI, individual members of the new family of steels can be "tailor-made" in mill heat-treating processess to specific hardness and strength characteristics.

U. of M. Expands Pharmacy Research Unit



A new wing for pharmacy research is being added to the East Medical building at the University of Michigan, Ann Arbor. It will be completed in 1961. Bennett & Straight, Dearborn, architects; A. Z. Shmina & Sons Co., Dearborn, general contractor.

ACQUIRES BATTLE CREEK FIRM

Sterling Aluminum Products, Inc., of St. Charles, Mo., has completed the acquisition of more than 95 per cent of the outstanding common shares of Rich Manufacturing Corp., Battle Creek, producer of engine valves.

FPRA Annual Convention Meets In Boston

Michigan bankers will be among national figures who will participate in the sessions of the 45th annual convention of the Financial Public Relations Association, to be held in Boston's Statler-Hilton Hotel on Oct. 30 through Nov. 3. The association has planned over 30 sessions during the four-day gathering which will cover financial public relations, advertising, and business development.

Keynote address will be given by Carl Bimson, vice-president of the American Bankers Association, who is a former vice-president and director of the FPRA.

Each day's program will begin with a session of the School of Public Relations.

Three sessions on installment credit will examine the installment loan picture, new loan services, and lending techniques. D. F. Krusell, executive vice-president of the Peoples Bank of Trenton, Mich., is departmental chairman of installment credit.

A general wrap-up clinic known as the "Bonus" clinic will be held at the closing session. James R. Pence, president of the Bank of South Haven, Mich., is a member of the Bonus clinic panel.

Charlotte Firm Names Wilson

H. F. WILSON

Howard F. Wilson has been named plant manager of Aluminum Extrusions, Inc., of Charlotte. Prior to joining the company, Wilson was manager of the Wire-Wrap Division of the Gardner-Denver Company in Grand Haven.

In his new post, Wilson will be responsible for all phases of manufacturing for the firm which produces custom extruded, fabricated and finished aluminum parts for the home appliance, furniture, building products, and similar industries.

Auto Production

(Based on Ward's Reports)

For Week Ended 1960	Cars & Trucks U.S. & Canada	Same Week Year Ago	Same Week Record 1955
Sept. 3	66,648	33,275	98,546
Sept. 10	67,197	37,257	146,484
Sept. 17	109,822	86,795	151,804
Sept. 24	145,455	119,137	144,534
Oct. 1	162,860	132,545	102,196

Total—Jan. 1 to Oct. 1, 1960 — 5,675,397 units.

Detroit Agency Makes Promotions

Ralph E. Keller has been named chairman of the board of Zimmer, Keller & Calvert, Inc., Detroit advertising agency, and Harry W. Calvert has been elected president to succeed Keller. A. H. Ritter succeeds Calvert as executive vice-president. Under the new setup, Calvert will be chief executive officer.

Keller, who joined the company in the early 1920's, has been president since 1949. Calvert has been with the agency for 15 years, and Ritter, formerly vice-president, joined it 13 years ago.

AMC Extends Automobile Warranty Program

George Romney, president of American Motors Corporation, announces that his firm is extending its automobile warranty program. Beginning with 1961 Rambler models, he pointed out, all mufflers and tailpipes will be guaranteed for the lifetime of the car while in the hands of the original owner.

In addition, Romney said, the company is extending its 12-month or 12,000-mile warranty on new Ramblers, in effect with dealers since Oct. 1, 1959, to owners of new 1961 Ramblers.

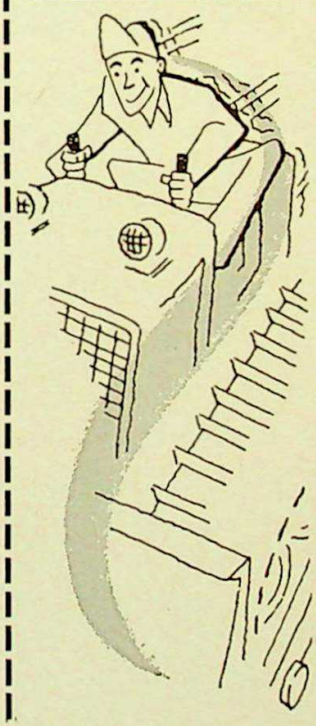
TAKES POST OFFICE BIDS

Bids for the superstructure for the new $3,000,000 Grand Rapids post office will be opened in mid-October, it has been revealed by J. & G. Daverman Co., Grand Rapids architects.

VETERAN BANKER DIES

B. P. Sherwood, Sr., chairman of the board of Security First Bank and Trust Co., Grand Haven, passed away in his home there on Sept. 28 after serving that city as a banker for 59 years. He also was a community leader in business, church, civic and fraternal affairs. Sherwood served as president of the Michigan Bankers Association in 1923, and also served as a member of the executive council of the American Bankers Association.

Cat Skinner ?



Certainly! Why not? Michigan's largest employment agency has filled requests for both . . . and hundreds of other unusual jobs from sand hogs to bug drivers. However, our stock in trade is the rich reserve of qualified job applicants we have for industry and business. Skilled workers, carefully screened, tested and selected to fit your needs. Hiring, of course, is entirely up to you.

Santa Claus ?

NO FEE CHARGED EMPLOYER OR APPLICANT

PUBLIC EMPLOYMENT SERVICE

SERVICE FOR EVERYONE

LOCAL · STATE · NATIONAL

Michigan State Employment Service

Division of

Michigan Employment Security Commission

Two-Ply Tires Coming

(Continued from Page 88)

important consideration as sustained high speed driving increases. Skid resistance will improve as greater flexibility results in a longer and wider "foot print" on road surfaces.

Weighing about a pound less than four-ply, the two-ply tire tests out with about 95 percent of wearing ability of the four-ply.

To conclude our discussion of new developments in the tires you ride on, let us brief some half dozen new approaches cited earlier.

Vulcanization Of Butyl

Three-piece mold—a giant step recently has been taken to insure a uniform precise tread through the use of a three-piece mold, which molds the entire tread. This permits more freedom in tread pattern, which now may take advantage of the center section of the pattern. The parting flash is eliminated and the tire is molded in a more nearly perfect circle. Precision tread molding, through the unit tread method, is an advancing trend.

Vulcanization of butyl—a new process for vulcanizing butyl synthetic rubber is helping the rubber industry turn out better quality tires at a faster production rate. Major application for the process is in manufacture of butyl bags used in the curing of tires. The new bags last longer, permit faster curing at higher temperatures, and improve quality by giving more uniform control of the tire curing process.

New Tread Materials

Pre-stressing tires—to give a tire a big shot of air right after its birth in a factory means more strength and a longer life. The air is supplied under pressure in a process called post-cure inflation, an added step in a production cycle that formerly stopped when the tire left the mold. By inflating the tire as it comes hot from the mold and keeping it inflated as it cools, the tire is pre-stressed for the conditions it will meet in service on a vehicle. The process can increase tire life 15 per cent or more.

Soft treads—to meet the demand for the soft, easy ride, new tread materials are being developed. These are said to have completely reversed tire-building concepts. Before this development, passenger car tires were made with stiff rubber treads to give wear, and a more flexible rubber in the carcass or body of the tire to cushion the ride. The new trend utilizes the soft rubber in the tread to absorb road irregularities and eliminate hardness of the ride, and a stiffer rubber in the body to give added stability and safety. The new tires also have far less squeal and sing than tires made with the old tread stock.

Precision tires—there is a whole new field of technology in the rubber industry with the aim of developing a precision tire. Precision processing is one phase, with automatic control over fixtures, processes and assembly, which results in great increases in 'reproductibility'—tires made exactly according to specifications, decreasing the variables. The unit tread mold contributes to this phase.

A second phase is precision inspection to ascertain the exact quality of the finished product. Electronic measuring devices, such as center gaging equipment, are being used to advantage.

Snap-On Treads?

Snap-on tread—still in trial stages, but showing imagination and promise, are tire treads that are changeable. Tread bands, which can be snapped into a tread groove on the tire body and held in place by ingenious methods, can be replaced with different types of treads for varying weather and travel demands.

High-speed tires—tires are being developed for ever-increasing speeds—for normal highway transportation, and for the unusually high speeds of racing. Tires are in existence to stand speeds of 100 m.p.h. for extended periods. A new goal is being approached for racing speeds of 500 m.p.h.

You can hardly wait?

Car Makers Rely On Chemical Industry

The chemical and automotive industries have not only coincided in their period of remarkable growth, but have been to a considerable degree reliant upon each other.

The chemical industry has contributed to many advances in consumer transportation—some of them widely known, as in fuels, and others given much less public notice.

The automobile industry is, in fact, one of the largest volume users of chemical products. These include interior and exterior finishes, of course, but additionally you will find them in floor pads, seat cushions, upholstery and elsewhere.

According to the Chemical Industry Facts Book, chemical products used in the manufacture of autos number almost 300, and their applications hundreds more, including uses to make rubber, gas and oil perform better.

The main chemical product groups are synthetic rubbers, plastics, adhesives, coatings, man-made textiles, reactive metals, cleaning compounds, hydraulic fluids, safety glass, anti-freeze, detergents, and fuel and lubricant additives.

As for specific chemicals, an estimated 35 pounds of sulphur and its derivatives alone are used in producing the average car today, for example.

Hence, future progress in the automotive industry is tied up with developments which the chemical industry has in progress.

As for chemical improvements for the future, here are some being discussed or developed:

—An automobile with no engine; power would come from a small cylinder on each wheel, holding oxygen and hydrogen gases.

—Plastic coatings for moving parts of machinery, a plastic so slick the part never need be oiled or greased.

—Molded plastic crash panels for dash boards (probably with urethane foam padding).

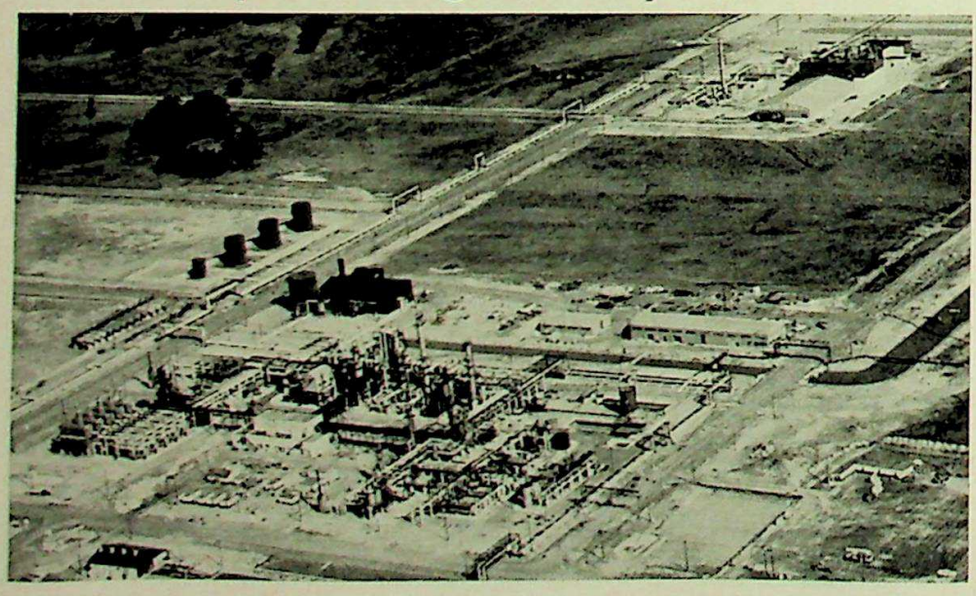
—Tires color-matched to the body finish.

Every day new processes and techniques involving chemistry are introduced. So many are the applications of chemistry to the car you drive, so swift are the changes, that we can hope to only touch on highlights in this roundup.

Consequently we have divided this broad topic into these brackets: (1) Fuels and lubricants and anti-freeze; (2) Plastics—with specific reference to upholstery, paints and body finishes, and molded parts; (3) Batteries as chemical units.

(Fuels on Page 96)

Dow Completes Saginaw Bay Facilities



Bird's-eye view of Dow Chemical Company's Saginaw Bay Division as it looks today. Making up this chemical complex are two plants—the petro-chemicals plant in the foreground, and the polyethylene plant beyond.

Reo Announces New Tractor-Truck Series

The Reo Motor Division of The White Motor Company, Lansing, has announced a new V-8 truck and tractor series with a 90-inch, bumper-to-back-of-cab measurement. All models in the D-600 and D-700 series are powered by Reo's Gold Comet V-8 gasoline engines.

The series consists of six models: Two single axle tractors with GCW ratings of 65,000 and 78,000 pounds; two tandem axle tractors with GCW ratings of 70,000 and 78,000 pounds; and two tandem truck models with GVW ratings of 42,000 and 52,000 pounds.

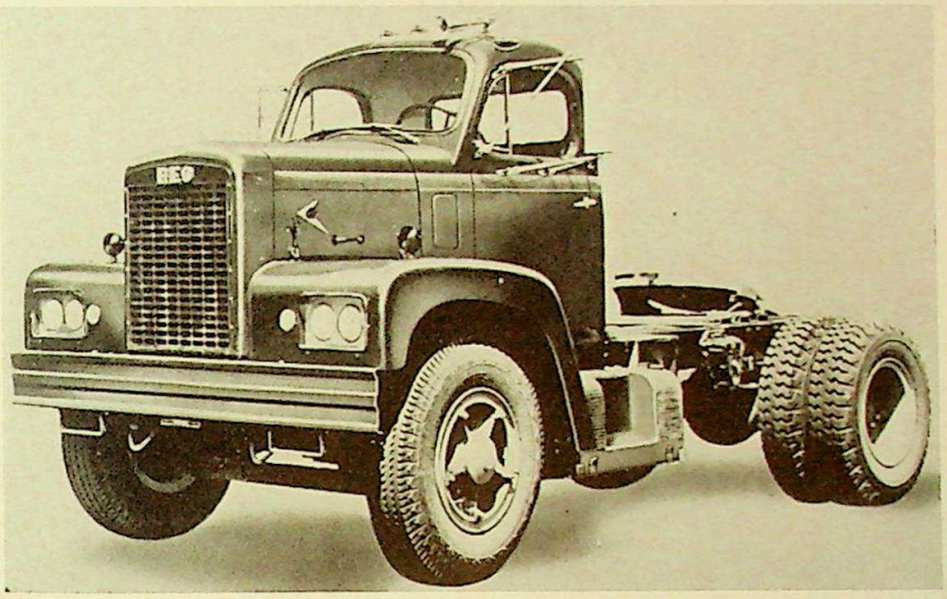
Each of these models is powered by Reo's Gold Comet V-207 horsepower engine with the Gold Comet OV-235 horsepower engine available as an option.

Companions To Other Series

The 90-inch bumper-to-back-of-cab measurement permits the tractors in this series to haul 40-foot square-nose trailers within 50-foot legal limits.

Designed specifically for over-the-highway operations, the standard tractor wheelbases are 134 inches, with a CA dimension of 72 inches. Standard wheelbases on the tandem truck models are 158 inches. For all models, longer wheelbases in six-inch increments are available.

The D-600 and D-700 series are companions to Reo's D-300, D-400 and D-500 series, which also have 90-inch BBC measurements but which use Reo's six-cylinder Gold Comet gasoline engines in horsepowers from 130 to 185.



Shown here is a model in the new V-8 truck and tractor series with a 90-inch bumper-to-back-of-cab measurement, recently announced by the Reo Division of The White Motor Company. All models in the D-600 and D-700 series are powered by Reo's Gold Comet V-8 gasoline engines.

WOULD BUILD MOTEL

Holiday Inns of America, Inc., a Memphis, Tenn., based chain, has offered to purchase a two-acre site in the Corktown Redevelopment area of Detroit for the erection of a 100-unit motel costing $1,000,000.

BANK *of the* COMMONWEALTH

Serves Greater Detroit

THROUGH 28 BANK OFFICES
OPEN UNTIL 5 P.M. DAILY
MONDAY THROUGH THURSDAY;
AND UNTIL 6 P.M. FRIDAY

DOWNTOWN AUTO BANK
300 W. Fort, cor. Washington Blvd.
Open 8 A.M. to 5:30 P.M. Monday through Thursday; and until 6 P.M. Friday

CHECKING, PAY-BY-CHECK & SAVINGS ACCOUNTS
3% MEDALLION SAVINGS ACCOUNTS & CERTIFICATES
SAFE DEPOSIT BOXES

LOANS: Commercial, individual, personal, auto, home improvement, home mortgage, and life insurance

MONEY ORDERS—TRAVEL CHECKS—FUNDS TRANSFERRED throughout the world

Member Federal Reserve System and Federal Deposit Insurance Corporation

Ah, The Doing and Undoing

YOU'RE RIGHT . . . . . .

What are you doing about it???

MARK IT . . . . . .

Doc Green in his "Press Box," Detroit News column, quoted Larry Snyder, U.S. track and field Olympic coach: "They are trying to get us to put the hop, step and jump as an event into college dual meets. I don't think that's right. I don't think you should win everything. You don't make friends rubbing a country's nose in the dirt. Let them win the things that are important to them, and we will try to win the things that are important to us."

We rather thought this could apply internationally, in wider things than sports, and we would be happy to see Mr. Snyder working for the State Department, or the United Nations.

SO IT SEEMS . . . . .

Norman Thomas lost all his battles, but, listening to our presidential candidates, we wonder whether Mr. Thomas did not win his war.

BUT HE DID . . . . . .

One of our analytical friends is trying to find out how Buchanan ever got elected without having an immediate family or even a dog with whom, or which, to be photographed.

RUSSIAN PAPERS PLEASE COPY . . . .

E. Bresford Davies, an English psychiatrist, warned a meeting of scientists that pep pills and tranquilizers are turning people into Doctor Jekylls and Mr. Hydes. Wouldn't it be nice if Mr. K. and Castro took tranquilizers and perhaps they might be Doctor Jekylls at least for an hour or two.

TRY TO COLLECT . . . . . .

The Institute of Life Insurance has figured that the economic value of the adult male is $200,000. In 1949, the Institute says, the value was $133,000. If that isn't inflation, we don't know what is, but if you are an American adult male—try and collect.

AND MORE STATISTICS . . . . . .

And the Health Insurance Institute reports that 2,400,000 American men have ulcers compared to 669,000 American women. While that could establish that more men worry about women than women worry about men, we rather think it establishes that women are much more intelligent, better balanced, and principally they think less about themselves than men think about themselves. But draw your own conclusion.

WE WONDER—

—About the be-bop hi-de-ho hoopla on the TV campaigns inviting people to think about their candidates and send "one buck" to the candidate campaign fund. If this type of TV actually reflects the type of voter who will elect the next president, we have an idea we ought to sell our stocks, even the utilities.

WORDS OF THE WISE — AND OTHERWISE

"Thinking is one thing in the world upon which no one has ever been able to put a tax or a tariff."

—Charles F. Kettering

"Sing a song of TV
For the little ones—
Four-and-twenty jailbirds
Packing tommy-guns.
When the scene is finished,
The blood is ankle-deep;
Wasn't that a pretty dish
To send the kids to sleep."

—Chi. Sun. Times

"Good industries seek good communities—no amount of advertising by the state can achieve good schools, public services, proper zoning and active recreational opportunities—."

—Economist William Haber to the Michigan Municipal League in calling for a "substantial reduction" in business taxes as being of "overwhelming importance" to wage earners and creating 900,000 new jobs by 1970.

"What I'm asking for is a more adequate concept of efficiency. Beauty and elegance must be considered part of the product."

—John Kenneth Galbraith

"These are the questions the conservative asks: For instance, he cannot understand why those public officials who were 100% wrong in their evaluation of the Castro regime in Cuba should be continued in the State department, just as he cannot understand how the debasement of our currency improves our economic position or how out-pricing ourselves in world markets improves our economy."

—George Sokolosky
in the Detroit Times

"-----I want you to know that in Hebrew there is no word for charity, although we are often praised as being very charitable people. The Hebrew word used is Tzedukah, which means righteous deeds."

—William Alkus

"Although the computer will be used to check standard theories of investing, no attempt will be made at forecasting."

—James H. Lorie, Assoc. Dean of the Business School, U. of Chi., embarking on a study of the N.Y. Stock Exchange's behavior, on an electronic computer, on $50,000 grant from Merrill, Lynch, etc., etc., and etc. (and we wish them the best of luck.)

ED.

"As a nation we certainly run off at the mouth. Why can't we shut up and make things at least a little harder for our opponents?"

—Clarence Johnson
designer of the U-2

"It is remarkable how often we are instructed to proceed with utmost caution but not to overlook the bargains that are available in a highly selective market. We can't think of a better way of getting rich. All that is missing is a hint of where these bargains lie."

—Chi. Trib.

Vinco Corp. Appoints Dunn

A major step in the comeback operation of Vinco Corporation, Detroit, was the recent appointment of Allistair Dunn as executive vice-president, reports J. S. Sherer, Jr., president. Dunn formerly was director of manufacturing for the Ohio Injector Company.

A. DUNN

The Vinco Corporation, now encompassing the Vinco Division, Detroit, and the Recony Division, Richmond, Va., had first quarter sales of $2,200,000 and earnings of 52 cents a share. The latter compared with one cent a share in the like period in 1959. Management expects gross sales of $8,000,000 in 1960.

As general manager of the Vinco Division, Dunn is instituting more aggressive policies and realigning sales and manufacturing operations so that Vinco, with anticipated new products, will be in a very favorable competitive position in the new space age. Both divisions are suppliers to the jet aircraft and guided missiles industries.

Albion Prepares 120-Acre Industrial Park

The City of Albion is preparing its 120-acre industrial park on old US-12 at the west edge of the city, reports Dallas C. Zonkers, executive secretary of the Greater Albion Chamber of Commerce. He cites the current growth of Albion resulting from recent oil discoveries in that area.

The City purchased the land and now is constructing major roads. Water, sewer and electricity also will be made available, Zonkers said.

12 Buick Roof Styles

(*Continued from Page 62*)

of effective braking area with 9.5-inch diameter drums.

Twelve roof styles offer greater individuality between models in the regular line.

There are 15 basic exterior colors and 60 two-tone combinations available, with more than 100 interior trim combinations and 16 seat styles.

DESIGNS GE LABORATORY

Giffels and Rossetti, Inc., Detroit, are the architects for a new $3,000,000 laboratory which General Electric Company plans to erect at Schenectady, N.Y., for the study of advanced manufacturing methods. Construction will start in early 1961 and is scheduled for completion late the same year. It will have 170,000 square feet of floor space.

Comet Offers Higher Horsepower Engine

Retaining their basic styling for 1961, but offering a higher performance optional engine, the new model Comets were announced publicly in mid-September by Ben D. Mills, Ford Motor vice-president and general manager of the Lincoln-Mercury Division.

"To meet the popular demand, we are planning to produce more Comets for 1961 and will assemble the new models at plants in San Jose, Calif., Kansas City, Mo., and Lorain, Ohio," Mills said. "The Comet was assembled only at the Lorain plant when it was introduced about six months ago."

Two Transmission Choices

The Comet continues with four models for 1961 including a two-door sedan, four-door sedan, two-door station wagon, and a four-door station wagon. All are available with either manual or automatic transmission.

Two engines will be offered on all models. The standard 85 horsepower economy engine, offering excellent gasoline mileage, will be continued. In addition, a 101-horsepower engine will be offered in the new models for the first time. Both engines operate on regular gasoline. The 85-horsepower unit has a displacement of 144.3 cubic inches, and the 101-horsepower engine has a 170-inch displacement. Compression ratio of both power plants is 8.7 to 1. The larger engine develops maximum torque of 156 foot-pounds at 2400 r.p.m.

A new grille and modest ornamental changes indentify the 1961 Comet models of the two and four-door sedans and the two and four-door station wagons. In addition to the standard 85-horsepower economy engine, the 1961 Comet offers an optional 101-horsepower six.

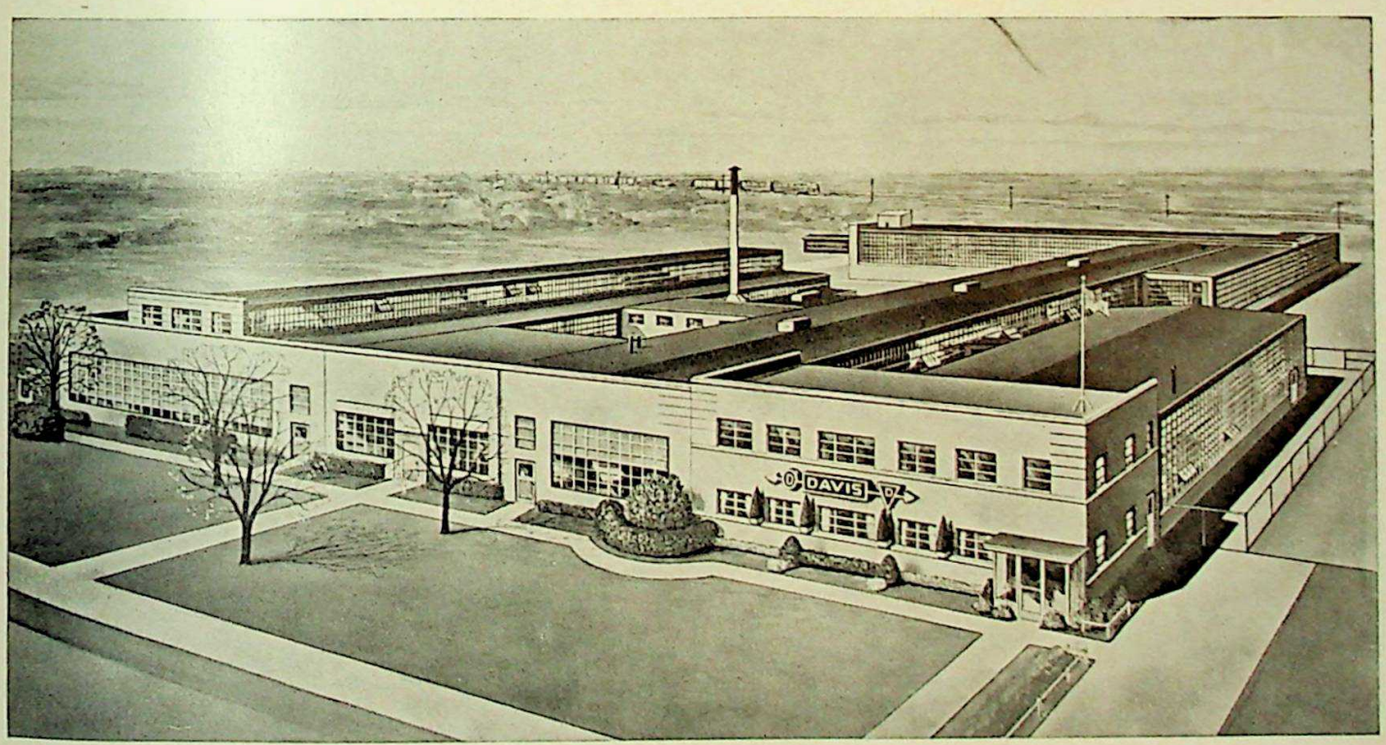
Principal styling changes include a new aluminum grille, new fender ornamentation, and new standard and optional trim fabrics. Standard fabrics offer more color harmony with exterior colors.

Comet's unitized body is rust-protected in underbody areas with a galvanized coating. Tests have shown this zinc-coating more than doubles the rust resistance of the car.

The "big car" ride of the Comet is due to a combination of a 114-inch wheelbase and carefully-engineered suspension system. Rubber mountings enable wheels to absorb road shock, while wheel travel and spring rate are comparable to luxury cars, resulting in a level, well-controlled ride.

Comet dimensions are ample for a family of six to travel comfortably with their luggage. The sedans are 194.8 inches

(Continued on Page 105)



Prototype • Tooling • Stampings • Assemblies

With Quality And Dependability

DAVIS TOOL & ENGINEERING CO.

19250 Plymouth Road, Detroit 28 **VErmont 5-6000**

Fuels Parallel Auto Industry's Growth

Problems affecting fuel provide the largest single chemical factor concerning the auto industry. This is a field in which it must cooperate with the chemical industry for solution.

To point this up—take a typical 1911 engine, an Oldsmobile Limited 6, rated at 60 horsepower and listing at $4,600. The modern engine develops several times the horsepower in less than half the size. The 1911 car did well to do six or seven miles per gallon—now we get nearly three times this figure in normal driving.

The old engine knocked at 4 to 1 compression ratio. Now we are at 9 to 1, some 10 to 1 and are looking at 12 to 1.

To accomplish the industry's aims in high compression engine design and performance requires fuels of very high octane number commercially available at every corner gas station—not conceived of 50 years ago.

Octane Up 40 Points In 30 Years

From an octane number of around 60 in 1930 we have moved up in 30 years to a current 100. In fact in the early 1920's the concept of octane number had not even been invented.

There has been an interesting correlation between the average compression ratio of engines and the average octane number of premium gasolines sold each year, especially since the advent of Ethyl anti-knock compound in the mid-1920's.

The volume of gasoline being produced today is over 15 times the volume of low octane gasoline produced in 1920—and at about the same retail price, including higher taxes.

So what has the consumer got from all the changes affected by the chemist and engineer in their combined effort? How has he benefited directly from research on fuel utilization?

One important measure is the increase in miles of transportation per gallon of fuel.

Data revealed by the General Motors Proving Ground staff shows the average of highway economy has increased from some 13.5 mpg in 1933 to 17.4 mpg in 1957—an increase of 30 per cent. A peak in such returns was reached in 1954, they point out, due to increased emphasis on vehicle performance. Had compression ratios and fuel octane numbers not continued to increase during this period, even greater losses in fuel economy would have been sustained, in order to maintain competitive standards of performance.

Hill Climb Time Cut In Half

Some conception of the changes in performance is measured by the time to climb a 11.6 per cent hill, which has been reduced by 50 per cent since 1950. So the American motorist has been able to "have his cake and eat it, too."

Another way to sum it up is to say that two gallons of today's gasoline in today's engine will do the work of three gallons in the engine of 25 years ago—saving motorists billions of dollars in their gasoline bills.

The outstanding factor in this progress was the introduction of tetraethyl lead as an anti-knock compound in gasoline in 1923. It started in a limited way of course, Ethyl Corp. being formed in 1924 to market the compound and the Ethyl treatment not being general in regular gasolines until in the 1930's.

Only One Thing Left To Do

As Monsanto's H. A. Marple, now retired, put it in a Chemical Progress Week speech before Detroit Rotary in a speech one May day a few years ago:

"Some of these (chemicals) have been in the crank-case since shortly after the Model T—others have just recently taken to the road. One of the chemicals with a lot of mileage is tetraethyl lead. Its history goes back to 1915, when the engines of automobiles were getting so big they were crowding out the drivers. In their eagerness to pack their cars with power, engineers had created a 'road locomotive with the passengers merely catching a ride on the rear end,' as the S.A.E. Journal has observed.

"Obviously the technologists decided—there was only one thing left to do. They must raise the 'compression ratio.' There was nothing wrong with this idea—except the knock. In motion, these 'souped-up' engines sounded as though there were a million gremlins inside hammering out the Anvil Chorus.

"Engineers noticed that the combustion flame in these noisy engines was a yellowish orange, instead of a conventional bluish hue. Experimenters assumed that the color must have something to do with the knock, and so they decided to darken the gasoline (because darker color might absorb more of the radiated heat from cylinder walls). They poured in some iodine, and it worked—not because of its color, as they later discovered—but because of the way it combined with the other elements. Only trouble was it cost too much.

"Then they tried a compound of selenium. As Charles Kettering, one of the scientific pioneers in the General Motors' anti-knock search has confided: 'It eliminated the knock, but it also took away the spark plugs.' The experimenters turned to another chemical—tellurium. The only trouble was, like selenium—it smelled, literally and figuratively.

"T. A. Boyd, another veteran of the era, recalls that 'in those days everyone in the laboratory carried an atmosphere with him, and his coming was announced before he fully arrived.'

"At last Thomas Midgely, Jr., won the American Chemical Society Nicholas Medal for his discovery that lead tetraethyl was the ideal anti-knock element. (Midgely became vice president of Ethyl Corp., set up in 1924 by Standard Oil and General Motors to market and license the 'knockless gasoline' compound."

The First Of Many Additives

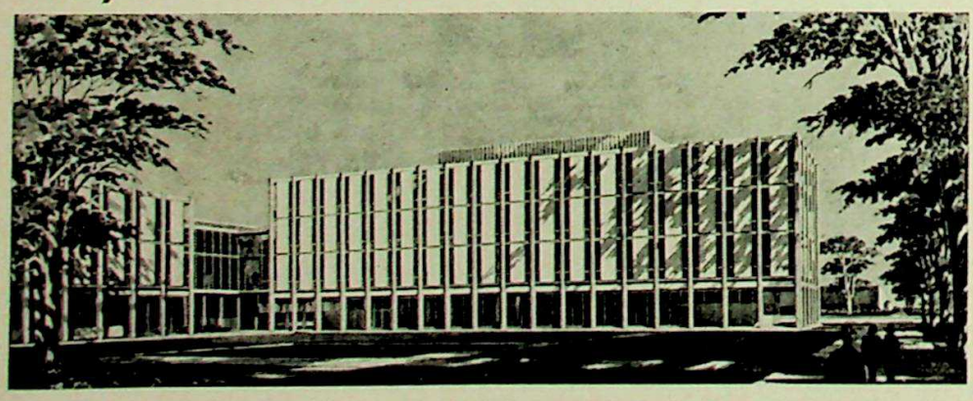
Ethyl gasoline was just the first of a whole line of chemicals which have been developed to make the engine purr more smoothly. These include the alphabetical additives such as TCP, designed to provide more pep and power, as well as a great group of oil additives developed to cut down corrosion and combat sludge.

So, over the years, gasoline got its power, says Ethyl's "Story of Gasoline," "as scientists tinkered with intricate molecules and rebuilt them more to their liking. They produced gasoline—then more gasoline and finally a superior fuel—at a bargain price."

And, of course, they still are tinkering, still rebuilding the molecules, for better fuels to come.

(Lubricants on Page 104)

Wayne State Adds Research Center



Architect's rendering of the new Life Sciences Research Center being erected at Wayne State University, Detroit, by A. Z. Shmina & Sons Co., Dearborn, general contractors. Providing 58,400 square feet, and costing nearly $2,000,000, the building is slated for completion by October. It was designed by Albert Kahn Associated Architects & Engineers, Inc., Detroit.

MOVES EXECUTIVE OFFICES

Square D Company, which formerly had executive offices at 6060 Rivard street in Detroit, has moved them to Executive Plaza, Park Ridge, Ill.

FM STATION TO OPEN

WDTM, first station of "The Taliesin Stations," midwestern FM-only group, is erecting a 150-foot tower atop the Cadillac Tower Building in downtown Detroit. The station will be located on the 20th floor of the building. It is expected to be in operation, on a 61 kilowatt signal, in September.

TENTH EDITION

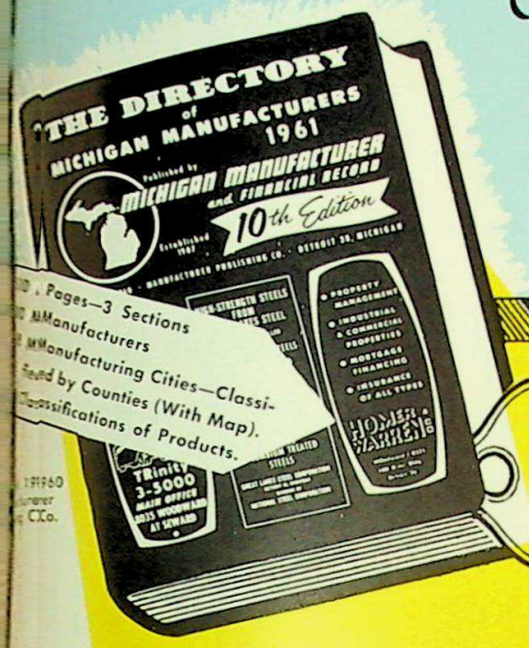
The DIRECTORY of MICHIGAN MANUFACTURERS

PUBLISHED BY

MICHIGAN MANUFACTURER and FINANCIAL RECORD

ESTABLISHED 1907

8543 Puritan Ave., Detroit 38, Michigan, UNiversity 4-9388



YOUR KEY to INDUSTRIAL MICHIGAN

If you buy—if you sell—if you want more business in Michigan—you need this industrial guide . . . your key to the market place. Your business is only as good as your information—your information is only as good as its source. This New, 10th Edition of the Directory of Michigan Manufacturers—the ONLY Industrial Guide for Michigan—is a 500-page volume containing vital, carefully prepared information, painstakingly gathered from many good, reliable, informed sources. Accuracy—maximum accuracy—is the keynote throughout. It required six months of intense compilation and the full resources of its companion—the monthly publication, Michigan Manufacturer and Financial Record to produce it.

In expressing our utmost gratitude, we, at the same time, acknowledge our debt to the leaders in city, county, state, and Federal government, to manufacturers' associations, Chambers of Commerce, our utilities, banks, businessmen, manufacturers and to all of you who again have cooperated with us so magnificently—so substantially. Between the covers of this industrial album, you will find an individual picture of every one of our 18,000 manufacturing operations. If you want to know who's who in Michigan—what they make—where they are—how big they are . . . then this Directory is indispensable operating equipment. One item of information put to work for you in your business can repay your investment many, many times. More and detailed information is given in this folder, and provision is made for your order convenience.

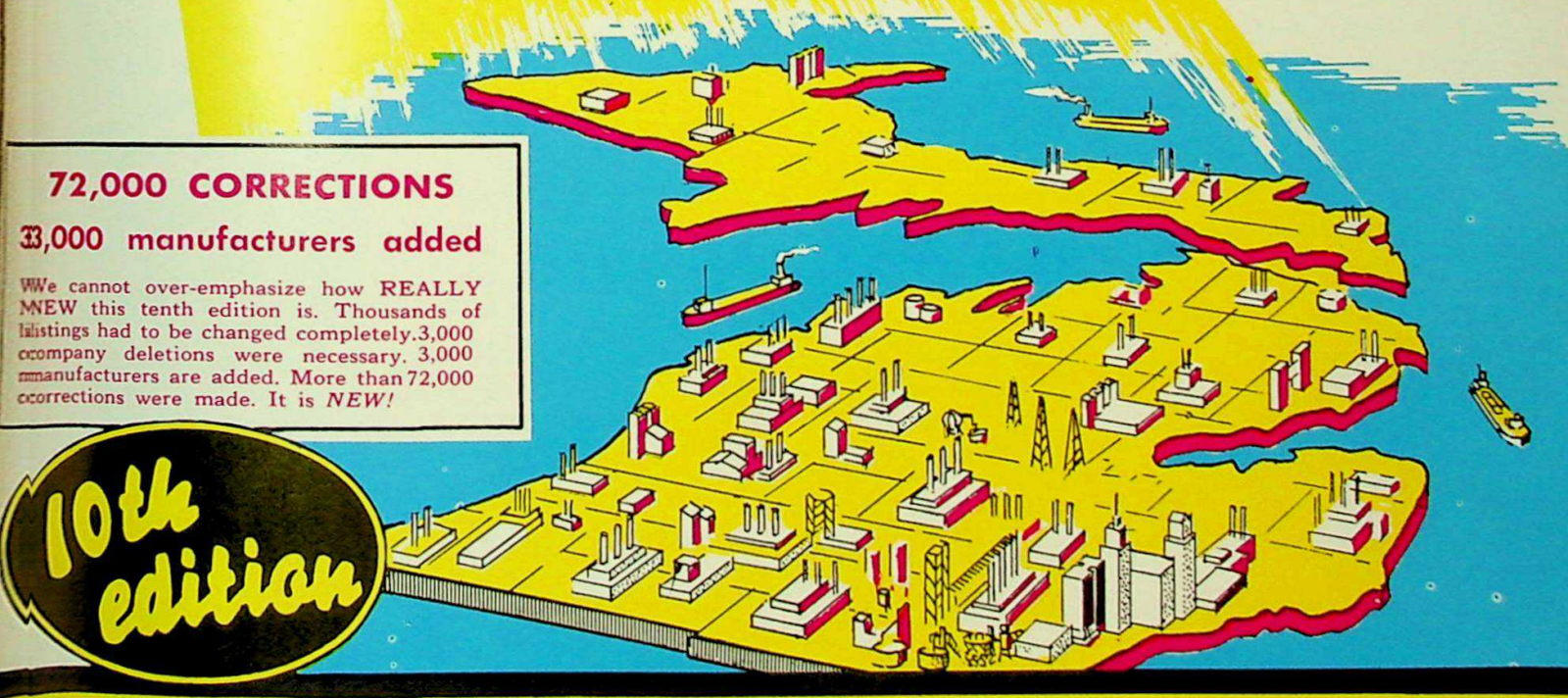
SPECIAL NOTE TO MICHIGAN MANUFACTURERS

Please check all of your listings immediately, report any additions which should be made, and forward promptly all changes as they occur.

72,000 CORRECTIONS

33,000 manufacturers added

We cannot over-emphasize how REALLY NEW this tenth edition is. Thousands of listings had to be changed completely. 3,000 company deletions were necessary. 3,000 manufacturers are added. More than 72,000 corrections were made. It is *NEW!*



10th edition

MICHIGAN'S *Great Buying and Selling Guide*

THE WHOLE MICHIGAN MARKET AT YO

CROSS R
INSTANT

The map page in the Directory will prove invaluable to the Sales Executive laying out new zones or checking the potential of existing ones. The map shows each of Michigan's 83 counties and county seats. The reference table on the opposite page lists Michigan's 668 manufacturing cities by counties. In addition, in the Master Listing Section, counties and population figures appear with the towns and cities.

NEW MARKETS NEW CUSTOMERS NEW MONEY

. . . is what this (Michigan's only) industrial guide will mean to you. Every executive, purchasing agent and sales manager in every home office and every branch office will find this Directory indispensable.

It tells instantly, and in detail—WHAT—WHERE—and WHO. It is your direct route to new business.

Here at your fingertips is a clear, concise, up-to-the-minute picture of any manufacturing operation you may want to know about: the name; complete address; names, initials, and titles of all major executives; products manufactured; type of management; corporation, partnership, or sole owner; number of employees, male and female; year established and export information.

Newest U. S. Preliminary Population Figures

QUALITY CLEAR THROUGH

The quality of the materials and workmanship in this Directory keeps pace with the quality of its contents. It was printed (letter press) and bound (case bound) by two foremost leaders in their fields, Ann Arbor Press and the Michigan Bookbinding Co. respectively.

The cover material is high-quality, moisture-proof, French Calf virgin vinyl. The stampings are gold. It is built to stand up under the most strenuous daily use. You will be proud of it in your office—in your bookcase.

$28.00

ADDITIONAL COPIES $23.00 EACH

YOU CAN'T AFFORD TO BE

IINGERTIPS!

EINCE....
ORMATION

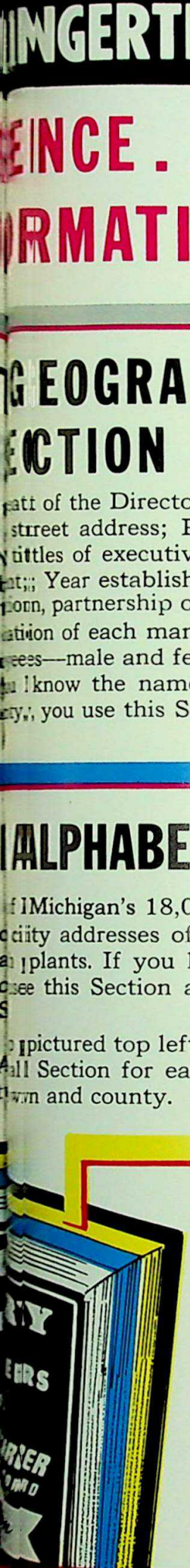
GEOGRAPHICAL ECTION

att of the Directory. It shows Name street address; Products manufac- tittles of executives from President at;; Year established; Type of man- orm, partnership or sole ownership); ation of each manufacturing center; ees—male and female—and export u know the name of the manufac- ry,; you use this Section.

ALPHABETICAL SECTION

f Michigan's 18,000 manufacturers alphabeti- city addresses of main and divisional offices, plants. If you know the name and not the see this Section and key back to the Master S

pictured top left is placed at the front of this all Section for easy location of any manufac- wn and county.



PRODUCTS SECTION (YELLOW CLASSIFIED)

Here are all of Michigan's manufactured products clearly identified under 3,300 classifications. If you know neither the name nor the address, but the products manufactured, you use this Section and key back to the full listing in the Master Section.

DETROIT

★CLARK EQUIPMENT CO. 324 E. Dewey, Buchanan
Axles, Automotive, Trailer, Industrial, Driving, Steering, Tandem, Bogie; Axle Housings, Rear; Air Suspension Systems; Castings, Electric Steel; Transmissions; Torque Converters; Axle-Transmission Combinations; Gears; Forgings; Trucks, Fork Lift (Gas, L-P Gas, Battery Powered); Carriers; Trucks, Hand (Battery Powered); Tractor; Dozers; Tractors; Towing; Shovels, Excavator; Scrapers; Loggers; Cranes, Containers, Shipping; Pumps, Hydraulic Bodies; Truck-Trailers; Truck
Geo. Spatta, Pres.; Claude Fenn, C. H. King, J. G. Mack, C. E. Killebrew, W. E. Schirmer, Geo. Turner, B. M. Walter, Vice-Pres.; J. F. Bechtel, Vice-Pres., Treas.; H. G. Hanlin, Sales Mgr.-Vice-Pres.; R. W. Robinson, Sales Mgr.-Auto. Axle Div.; G. A. Limbach, Sales Mgr. IND. Prod.; Div.; G. A. Graham, Export Mgr. (Battle Creek); M. E. Graham, Cable Code.
Clarquip, Cable Code.
Emp. 2,000; Est. 1903

★ELECTRO-VOICE, INC. Carrol & Cecil Sts., Buchanan
Microphones; Stands, Desk & Floor; Microphone Accessories; Loud Speakers; Phonograph Equipment; Amplifiers; Tuners; Communications Equipment
Div; Martin Furniture Div., Dowagiac
A. R. Kahn, Pres.; R. E. Siekman, Exec. Vice-Pres.; W. A. Beaverson, Vice-Pres.-Eng.; Lawrence LeKashman, Vice-Pres.-Sales; F. B. Lester, Vice-Pres.-Mfg.; T. H. Faber, Sec.; R. F. Colip, Treas.; W. H. Wennerberg, Sales Mgr.; J. N. Grieveson, Pur. Agt.; Telescomm, Cable Code
Corp., Export Mgr.
Emp. M. 350, F. 500; Est. 1930

H & H PRODUCTS, INC. 215 S. Post Rd., Buchanan
Automobile Parts; Aircraft Parts; Agricultural Machinery
H. J. Post, Pres.; ... Sec.,
Treas.
Emp. 17; E...

★DETROIT HOIST & MACHINE CO. 8220 Morrow, Detroit 11
Hoists, Electric; Hoists, Air; Cranes, Electric; Hoists, Monorail; Winches
A. S. Watson, Pres.; Gen. Mgr.; G. B. Martin, Exec. Vice-Pres.; R. W. Fleming, Vice-Pres.; Miss Bertha A. Hinman, Sec.; T. R. Fleming, Treas.; Detroist, Cable Code
Emp. M. 65, F. 5; E... 1905

DETROIT ICE MA... CO. 2615 12th S...
Evaporators, ... frigerati...
G. Br...
Pres.; ... Staff, ...
Emp. ...

DETRO... Inc...

DETROIT ... CO. 10932 ... Food Products, Br... Zerilli, Pres.; ... Gen. Mgr., ...

YOU BE THE JUDGE!

It took two years of intense compilation and thousands upon thousands of dollars to produce this industrial guide of Michigan. Your price is $28. Is it a bargain?

A

Auto Specialties Mfg. Co., St. Joseph, Hartford
Auto-Therm Corp., Center Line
Auto Tool & Die Co., Detroit
Auto Truck Equipment Co., Detroit
Auto-Visor Map, Inc., White Pigeon
Autocon Div.
Palmer-Bee Co., Pontiac
Automatic Bar Products Co., Ann Arbor
Automatic Control Service, Pontiac
Automatic Controls Corp., Detroit
Automatic Lubrication Co., Ann Arbor
Automatic Metal Finishing Co., Grand Rapids
Automatic Poultry Feeder Co., Zeeland
Automatic Products Co., Detroit
(See American Spring of Holly, Inc., Detroit)
Automatic Products Co., Jackson
Automatic Screw Products Co., Charlotte
Automatic Short-Run, Inc., Hudson
Automatic Specialties Co., New Baltimore
Automatic Steel Products Corp., Grand Haven
Automatic Switch Co., Roscommon
Automatic Tool & Cam ...

M

AUTOMOBILE PARTS

AC Spark Plug Div., Flint
A P Parts Corp., Detroit
Ackerman Associates, Inc., Detroit
Aero Motive Mfg. Co., Kalamazoo
Albert, Geo Mfg. Co., Detroit
Allied Products Corp., Marysville
Allwork Mfg. & Eng. Co., Detroit
Alma Gear Co., Alma
Alma Piston Co., Alma

AMERICAN FORGING & SOCKET CO.
BRANCH ST.
PONTIAC 12

American Forging & Socket Co., Pontiac
Anderson-Bolling Mfg. Co., Spring Lake
Anderson Bros. Mfg. & Eng. Co., Detroit
Arvey Corp., Detroit
Auto Metalcraft Mfg. Co., Oak Park
Auto-Visor Map, Inc., White Pigeon
Automotive Industries, Inc., Owendale
Automotive Surplus Co., Inc., Detroit
Bailey Co., Birmingham
Balch Mfg. Co., Kalamazoo
Barcy-Nicholson Co., Detroit
Barley-Earhart Corp., Portland
Barr Industries, Inc., Detroit
Berlew Products, Inc., Ferndale
Black River Products Corp., Onaway
Brodie's Muffler Service of Dix, Inc., Lincoln Park
Brown Corp. of Ionia, Inc., The, Ionia
John A. & Sons, Oxford
...ducts Corp., Detroit

WITHOUT THIS NEW-BUSINESS GETTER!!

UP-TO-DATE INFORMATION!

Your industrial guide can be kept alive and always up-to-the-minute with its tie-in with the monthly publication, Michigan Manufacturer and Financial Record.

In this monthly publication a wealth of information supplemental to the Directory is found. For instance: the regular feature "NEW CORPORATIONS" which describes new corporations with address, capitalization, chief executive, nature of business, and products manufactured. All new manufacturers are included. Another continuing feature "PERSONALS" which tells all major changes in executive personnel, must be interpreted as vital supplemental information to the Directory. These combined with the wealth of additional, fresh business news appearing consistently, constitute a supplementing package applied effectively by most Directory users. If you are not already doing this we recommend it to you. Note substantial savings (below) combining subscription to the Publication and order for the Directory. Sample copies of the monthly publication are available on request.

THE EDITION IS LIMITED. FORMER EDITION SOLD OUT 3 MONTHS IN ADVANCE OF ISSUE OF THIS NEW ONE. Your order *NOW* is recommended.

MICHIGAN MANUFACTURER and FINANCIAL RECORD
THE DIRECTORY of MICHIGAN MANUFACTURERS 1961
Published by MICHIGAN MANUFACTURER and FINANCIAL RECORD
10th Edition

DIRECTORY ORDER

Please send THE DIRECTORY OF MICHIGAN MANUFACTURERS as indicated below:

Name_____ Title_____

Company_____

Address_____

City_____ Zone_____ State_____

- ☐ 1 Copy $28.00
- ☐ 1 Copy and one year subscription to Michigan Manufacturer and Financial Record (regular subscription rate, $5.00 per year) $31.50
- ☐ 1 Copy and 2 year subscription (regular subscription rate, $7.50 per two years) ... $33.00
- ☐ 1 Copy and 3 year subscription (regular subscription rate, $10.00 per three years) .. $34.50
- ☐ Additional copies, $23.00.
- ☐ Remittance enclosed ☐ Send C. O. D.

MICHIGAN MANUFACTURER and FINANCIAL RECORD

MANUFACTURER PUBLISHING CO.
8543 PURITAN
Detroit 38, Michigan

DO NOT BE CONFUS

This is the ONLY manufacturers' rectory for the State of Michig The first edition was published years ago. It is the product of t 54-year-old Company which wi out interruption has published t Monthly Publication:
MICHIGAN MANUFACTUR and FINANCIAL RECORD

Ideal for short hauls is the new Dodge C-700 (left) which features a 194 b.h.p. V-8 gasoline engine and maximum G.C.W. rating of 50,000 pounds. The new Dodge NC-900 tractor (right) has a Cummins NH-195 Diesel engine and a maximum G.C.W. rating of 65,000 pounds.

Featuring a thrifty 125-horsepower, six-cylinder engine with a displacement of 251 cubic inches, this 1961 Dodge D-500 is a highly economical truck for short hauls and in city traffic. It has a maximum gross vehicle weight rating of 19,500 pounds. It is one of 140 basic models.

Dart Pick-Up Headlines '61 Dodge Trucks

A stylish Dart half-ton pick-up headlines a completely new series of light and medium-tonnage 1961 Dodge trucks, with the new models featuring the only Inclined 6-cylinder gasoline engines in the trucking industry, it was emphasized by M. C. Patterson, Dodge general manager, in announcing the 1961 line in mid-September.

In making the announcement, Patterson said that this was the second totally new line of trucks Dodge has introduced in the past year. "In 1960, we presented a new series of medium and high-tonnage, cab-forward trucks," he said. "We provided a new cab design for truck owners who wished to avoid the extra length of conventional models or the extra cost of tilt-cabs. We offered swing-out fenders to ensure the most convenient accessibility in the trucking industry.

Stresses Fuel Economy

"This year Dodge is introducing another entirely new series of trucks, which range from the Dart pick-up to a 2½-ton heavy tractor. Styling, chassis, steering, suspension system—all are new."

Patterson stressed the passenger car styling and handling characteristics of the 1961 trucks and the exceptional fuel economy to be derived from the new 6-cylinder engines.

The Dart pick-up has a low, wide silhouette with clean lines that flow smoothly from front to rear. A new drop-center frame, coupled with balanced design suspension and wide treads, gives remarkable road stability.

The larger of two Inclined overhead valve engines develops 140 horsepower in a displacement of 225 cubic inches. Dodge also is offering a smaller 101-horsepower, 170-cubic-inch Inclined 6-cylinder engine for truck owners who operate light delivery services.

Offers 140 Basic Models

"Inclining the engine has made it possible to lower the hood height and increase accessibility to the engine compartment," Patterson explained. "In our new light-tonnage models, the hood forms the top of the fender housing. As a result, the top surface of the fender housing is lower, exposing more of the engine and making it easier to service."

Patterson said 140 basic models will be available in the 1961 line, which includes conventional cab, cab-forward, 4-wheel drive, forward-control, a school bus chassis, and tandem units. He said 11 gasoline engines will be offered, ranging in horsepower from 101 to 228. Eight Diesel engines, ranging in horsepower from 160 to 250, also are available.

Gross vehicle weight ratings on the new trucks range to 53,000 pounds, and gross combination weight ratings to 76,000 pounds.

Newly Designed Cab

In addition to the Dart pick-up, Dodge is introducing a compact three-quarter-ton, forward-control unit. Highly maneuverable on its short 104-inch wheelbase and available with either the 101 or 140-horsepower Inclined engine, it has a maximum gross vehicle weight rating of 7,500 pounds.

A highlight of the new trucks is a 35-ampere alternator, which replaces the conventional generator. The alternator system reduces maintenance costs by giving trouble-free service two to three times longer than a generator.

Steering effort has been reduced 30 per cent on light-tonnage and 15 per cent on medium-tonnage units. Longer and wider front and rear springs ensure a better ride. A new cab increases driving comfort and provides maximum ease of operation and maintenance.

The new drop-center frame enabled Dodge to achieve styling and design advances inside the cab without sacrificing headroom or driver comfort. It also made possible a lower center of gravity and cab position. The conventional models are up to seven inches lower and four inches wider than previous units. The wider cab permits a full 60-inch seat cushion.

Four New Diesel Engines

Sweptline pick-up bodies have been redesigned to complement the new styling theme, with the box width increased four inches, boosting cubic volume capacity ten per cent.

The Dodge Town Wagon, which can carry up to eight passengers or 155 cubic feet of cargo, offers a load space more than 50 per cent greater than that of conventional station wagons.

The new Dodge Town Panel, which has an interior height of 53 inches, is available with either of the Inclined 6-cylinder engines or a rugged 200-horsepower V-8 engine.

Introduction of the four Cummins Diesel engines headlines advances made by Dodge in the high-tonnage field. These are the C-160, NHE-180, NHE-195, and the NH-250.

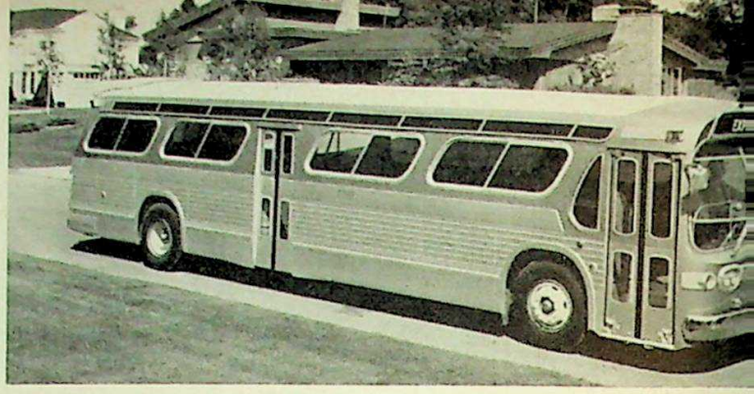
★ ★ ★

The 1961 Dodge Dart half-ton pick-up combines passenger car styling and handling ease with traditional truck durability. It features a highly economical new 140-horsepower slanted 6-cylinder engine.

Available in wheelbases of 114 and 122 inches, the Dart pick-up has a maximum gross vehicle weight rating of 5,100 pounds. It headlines a completely new series in the 1961 Dodge line of 140 basic models of trucks.

★ ★ ★

This GMC Junior Van, only 14 feet long and shorter than American-made compact cars, will be one of the displays at the National Automobile Show in Detroit. It is one of six show trucks displayed by the GMC Truck & Coach Division.



Another attraction of GMC Truck & Coach Division's exhibit at the Detroit show will be this new GM transit coach. Seating 53 passengers, the coach has 93 per cent more glass area than former models, and other unique design features.

GMC Displays Six Trucks At Auto Show

A colorful lineup of trucks, ranging from the compact GMC Junior Van to various heavy-duty highway tractors, will headline the GMC Truck & Coach Division exhibit at the 43rd National Automobile Show in Detroit on Oct. 15-23.

Aluminum Tilt-cab

Trucks include a Suburban station wagon, GMC Junior Van package delivery truck, a Wide-Side pickup, a DF7105 aluminum tilt-cab Diesel highway tractor, a BW5500 tandem-axle tractor powered by a 401 V-6 engine, and an L7000 steel tilt cab tractor.

The smallest display model will be the Junior Van, a unit shorter than American-made compact cars yet having the bulk load capacity of a one-ton stake truck.

At the other end of the scale will be the DF7105. Powered by a V-8 Diesel engine (8V-71) developing 236 gross horsepower, this highway tractor has a gross combination weight rating of 76,800 pounds compared with the Junior Van's 7,500-pound rating.

Glamor in sleek styling is designed into the GM transit coach (Model TDH-5301) that will be shown. It seats 53 passengers and gives them a better view through increased use of glass. Total glass area is 93 per cent greater than in former models.

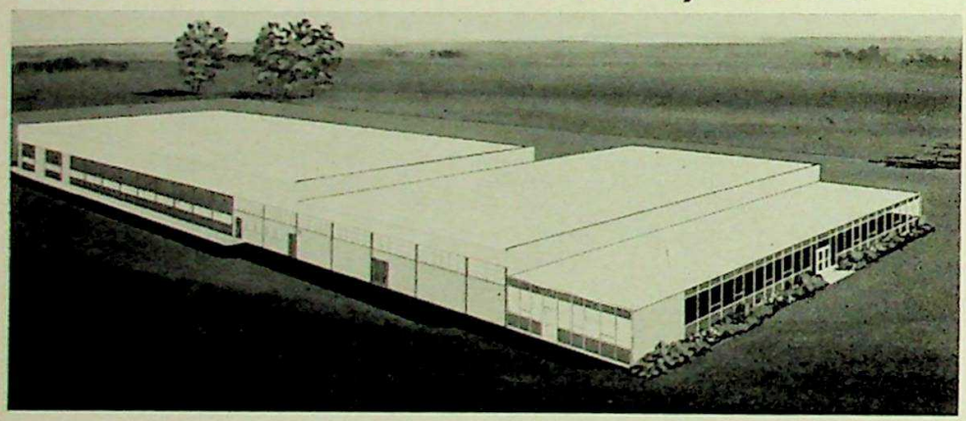
Shows V-12 Engine

Other coach features include a new heating and ventilating system, fluorescent lighting, improved air suspension, a hydraulic shifting V-drive and V-6 Diesel engine power.

Heading the engine exhibit will be a 702 cubic-inch gasoline V-12, the first of its kind in the trucking industry. Complementing the V-12 display will be an animated cutaway 401 cubic-inch V-6, and two other show engines.

While going through a complete cycle, every moving part of the 401 V-6 is activated and highly visible to onlookers. It fully dramatizes the exclusive V-6 principle of GMC's gasoline engine line.

GMC Truck Builds New Factory Branch



Architect's sketch of GMC Truck & Coach Division's new factory branch now being constructed at Wyoming and Ford road in Dearborn. H. F. Campbell Construction Co., Detroit, is the general contractor.

Construction of a new GMC Truck & Coach Division factory branch to serve the greater Detroit area has been started at the northwest corner of Wyoming and Ford road in Dearborn, it has been announced by Calvin J. Werner, GM vice-president and general manager of the Division.

Scheduled to open for business early in 1961, the building will cover 32,000 square feet on a 4½-acre site. Ideally situated for truck users, the building will be only a short distance from the point where Ford road, Michigan avenue and the Detroit Industrial Expressway converge. Facilities will include 10 drive-through stalls that can handle 30 units at a time, plus chassis dynamometer room. Near the service area will be a 11,000 square-foot parts storage and retail department.

Once the facility is completed, the present GMC factory branch headed by Ralph L. Slaten will move its entire GMC retail sales, service and parts operation from the present location at 3925 Vermont avenue in Detroit. GMC's Detroit Zone wholesale operation, under the management of Edgar W. Jolly, also will shift its offices to the new location. East side Detroit users, however, will continue to be served from the factory sub-branch at 6133 Concord avenue.

Directs Ex-Cell-O's Purchasing

Fred T. L. Grimm, formerly purchasing agent of the Detroit plants of Ex-Cell-O Corporation, has been named director of purchases, it has been announced by M. B. Montgomery, vice-president - manufacturing. Grimm succeeds Fred Sicklesteel, who retired early in September.

F. T. L. GRIMM

Joining Ex-Cell-O in 1934, Grimm entered the purchasing department in 1941, was made a buyer in 1942, chief buyer in 1947, and purchasing agent in 1952.

An engineering graduate of Ohio Northern University, Grimm is a member of the Engineering Society of Detroit, and has served on the board of the Purchasing Agents Association of Detroit.

MICHIGAN WEEK PROGRESSES

Six vice-presidents have been elected by Greater Michigan, Inc., the organization which sponsors Michigan Week each May. The new vice-presidents are: K. T. Keller, former president of Chrysler Corp.; E. O. George, sales vice-president, Detroit Edison Co.; James Robertson, Sault Ste. Marie business man; Herbert Daverman, Grand Rapids architect; Dale Sellers, vice-president of Manufacturers National Bank of Detroit; and Leonard Woodcock, vice-president of UAW-CIO.

BOOSTS CRUDE OIL PRICE

The Ohio Oil Company has increased its price for Michigan crude oil from the Albion, Pulaski and Scipio fields by 15 cents per barrel. The new price is $2.95 per barrel.

Die Casting Exposition In Detroit

An attendance of 10,000 die casting engineers, die casting plant managers, buyers of die castings, metalworking production executives, tool and manufacturing engineers, and design engineers and stylists is expected for the First National Die Casting Exposition and Congress which will be held in the Detroit Artillery Armory from November 8—11, 1960. Invitations are being sent to 300,000 executives, buyers and engineers in industry.

Sponsored by the Society of Die Casting Engineers, the Exposition list now includes more than eighty manufacturers of die castings, die casting machines, dies, die steels, casting metals, production and finishing equipment, die casting supplies and die casting services.

Holds Technical Congress

The technical congress which is being held at the Detroit Artillery Armory in conjunction with the Exposition includes thirty technical papers by outstanding authorities in the field. The sessions will deal with such general subjects as die design, die building, metallurgical developments, what's ahead in die castings, competition to die castings, cost and profit, quality control and vacuum die casting.

According to John L. MacLaren, chairman of the affair, the advance registrations and comprehensive list of leading manufacturers who are exhibiting points to a most successful first Exposition and Congress for the Society. He also announced that a complete audit of the attendance at the Exposition will be made available to exhibitors shortly after it ends.

All persons registering for the Technical Congress will be given a bound volume including all of the technical papers at the conclusion of the affair. Technical sessions at the Congress are held from 9:30 to 12:00 noon and 1:30 P.M. to 4:00 P.M. on every day.

The registration fee for the Congress is $12.00. No fee will be charged those who attend the Exposition only.

Plans have been completed for an extensive banquet affair on Thursday evening, November 10, which will be held in the Veteran's Memorial Building.

Joseph G. Rayniak, director and past president of Outboard Marine Corporation, Waukegan, Illinois, is scheduled to be one of the speakers for the evening. Noted humorist Art Briese, of Hot Springs, Arkansas, will be the after-dinner speaker. Also at the banquet, the Society of Die Casting Engineers will present its first SDCE Achievement Award to an individual for outstanding achievement in the application and development of the die casting process.

Klenk Epoxy Corp., Detroit, manufacturer of epoxy glue, has been acquired by the Hapman Corp., of Kalamazoo and Detroit, in an exchange of stock.

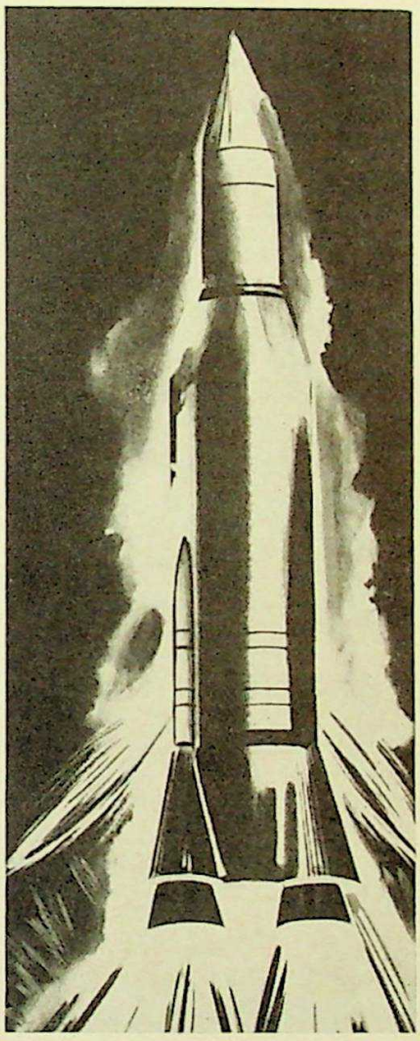
Imperials Have Silencing Pad

(Continued from Page 85)

step process which includes coating the body sill with wax, assuring many years of rustfree door sills even in extremely corrosive areas. All Imperials are undercoated at the plant, and have an underhood silencing pad of thick fibre glass, assuring efficient sound absorption in these two areas.

Imperial air-conditioning units feature new, rectangular outlets located on the upper surface of the instrument panel. The outlets telescope up from the instrument panel to permit passengers to aim cool air jets for maximum effect.

In a move aimed to further development of a classic car look, stylists have restored free standing head lamps in the 1961 version of the Imperial. The grille is simple in design and centrally placed in the classic car tradition.



MISSILE PRODUCTION TOOLING SPECIALISTS

GENERAL MACHINING OF LARGE GUIDED MISSILE COMPONENTS

VERTICAL BORING MILLS:
80" swing 60" under rail, equipped with hydraulic duplicator.

Boring & Grinding: 54" swing 20" under rail, equipped with hydraulic duplicator.

HORIZONTAL BORING MILL—4" Bar:
Boring, Milling and Drilling
60" Cross Travel and 50" Vertical Travel.

LATHES:
55" swing over carriage, 84" between centers, equipped with hydraulic duplicator.

26" swing over carriage, 168" between centers, equipped with hydraulic duplicator.

HYDRAULIC PLANER:
Cleveland openside—54" x 72" x 14'.

GRINDERS:
40" swing over ways, 24" over cross slide, 48" deep, equipped with hydraulic duplicator, 26" swing x 100 centers roll grinders.

ELECTRICAL DISCHARGE MACHINE:
Elox Model #500 and #700 Precision Machines Sparcatron 30" x 72" capacity, 250 Amp.

ALSO OTHER LARGE EQUIPMENT

Industrial Tool Engineering Company

13849 Keal near Schaefer & W. Plymouth

TExas 4-5700 **DETROIT 27**

Sealed-In Lubrication Makes Debut

Customer convenience and economy are the motivating factors behind the drive of the automotive industry for the lifetime lubricant. While this goal has manifest appeal to the car owner and its realization may be closer than many think, it seems safe to say that the average motorist pays very little attention to the subject of lubrication generally. He regards it as a necessary chore, but leaves the problems to engineers and chemists.

Cadillac's Sealed-In Fittings

As to the grease job, it was only last summer that some automotive executives were being quoted in the conservative prediction that, within the next five years, cars that will never need a grease job may be produced. They pointed out that the number of fittings on the chassis which need lubrication has been declining for years, through the use of new materials that need no grease.

Yet only a few months later Cadillac was revealing 1961 models with sealed-in lifetime fittings. Other makers did the same.

Again, it is the chemical industry that works constantly for more improved lubrication—for less frequent lubrication—and eventually no greasing, with lifetime man-made lubricants.

This is a far cry from the early days when the motorist spent an hour or so each Sunday, filling a multitude of oil and grease cups, before the Sabbath drive.

Automobile manufacturers have been working for the past decade or so to enjoy the sales advantages of being the first to develop a car that does not have to be greased.

From mid-1940's to 1950 there was a trend of steady increase in the number of fittings, but from 1950 on engineering advances have eliminated more than half of the grease fittings on new cars . . . from 25 to 10.

Fewer Metal-To-Metal Bearings

The trend in the "death march of the grease gun" is quite clear. And a good possibility exists of having no underchassis lubrication required in the field in the next few years.

Customer lubrication requirements are being cut down by rubber suspension mountings, permanent lubrication points, nylon bushings and new suspension designs.

Conventional metal - to - metal chassis bearings which still require periodic lubrication generally, are confined to the front suspension and steering linkage.

Some of the self-lubricating systems offered in the last 25 years do a good job but have not encountered too much favor due to the cost of the installation.

The development of synthetic lubricants is an area to watch.

Last May, Robert Hansen, of Dow Chemical's automotive chemicals laboratory, was quoted as pointing out that the more costly but lifetime lubricants of the future (depending on common sense maintenance practices by the driver) have two big ifs:

1. The need for developing some method of eliminating outside oil contaminants from engine and crankshaft.

2. Need for further increases in compression ratio for high efficiency—perhaps 12 to 1 as against 1960 model year high of 10.5 to 1.

He said the use of synthetic lubricants in the present piston engine would make it easier for the design engineer to increase compression ratio much more than 10 or 11 to 1 without causing engine thud or rumble.

Whenever the automobile manufacturer is ready for them, he said, Dow has synthetic fluids ready to market which will provide virtual lifetime lubrication.

The synthetics do not form deposits on combustion, they have high film strength and resist sludging, but they would cost probably three times as much as the top multigrade oils of today.

Another chemical approach to the problem is in plastics.

About a year ago the press reported a duPont release on a nine-month test on a taxicab fleet of a new type ball joint suspension bearing and steering linkage bearing, which ran 50,000 miles without greasing. The bearings were lined with woven fabric of "Teflon," TFE-fluorocarbon fiber, developed by duPont, known to be slippier than ice. It presented a non-sticking surface ideal for bearings.

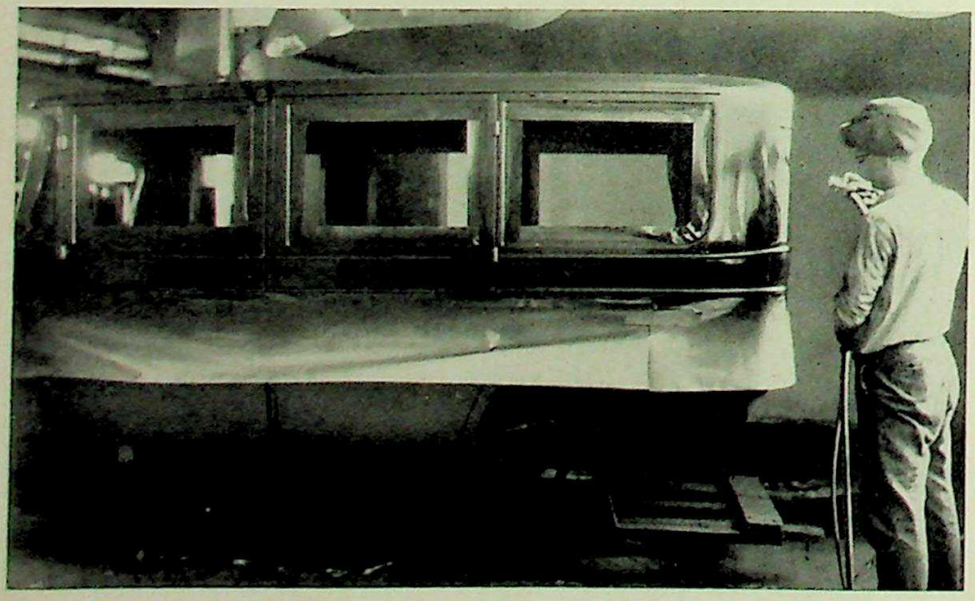
"Poor Man's Power Steering"

The bearings didn't squeak when wet and improved ride and handling performance, some of the drivers referring to the fiber bearings as "the poor man's power steering."

Meanwhile, as the customer waits for the general development of the no-grease car, there is a constantly lengthening period between oil changes being suggested by car makers. This is countered by the oil industry, which clings to its classic rule of changes every 1,000 miles —with the conflict as yet not resolved.

Car Finishes Made Gigantic Strides

From the beginning, the chemist has, of course, had a hand in the finish of your car—through the old carriage varnishes and enamels, spectacularly with the advent of Duco in the early 1920's and recently developed acrylic lacquers for permanent high luster finishes. Even more spectacular innovations are believed to be over the horizon.



A milestone in the development of automobile production was reached when bodies were sprayed with lacquer for the first time to give them a lustrous finish, rather than using the old hand-brush method. This photo shows one of the earliest such spraying operations in a GM plant.

The paint work on the earlier cars followed for 25 years or more the deliberate methods of the old horse and buggy days. These finishes were originally confined to black baking enamel and color varnishes known as "carriage finishes." These were applied with a brush and were very slow drying, and required many coats—up to 48 coats and up to 30 days— in order to achieve sufficient film thickness to give reasonable durability.

Choked Assembly Lines

These tedious operations choked the nation's automotive assembly lines, creating a bottleneck in production. Knudsen had speeded up the process by using spray guns to apply the paint, but as the century moved into its third decade it still took a month to apply and wait for paint to dry on each car.

Reminiscence by Lawrence P. Fisher of the woes of car makers of four decades ago livened the du Pont antitrust trial in Chicago early in 1953.

One problem of manufacturers was that persons who garaged their cars in

(Continued on Page 106)

Celebrates 50 Years In Dearborn Banking

"A thousand pieces of anniversary cake were cut today for all the well wishers who stopped in to see us," stated Roy L. Ferguson, Manufacturers National Bank vice-president and officer in charge of its Michigan-Mason Office. The occasion—the marking of fifty years of banking in Dearborn—took place Sept. 22.

At a special ceremony conducted at the Dearborn office, William A. Mayberry, MNB chairman of the board, paid tribute to the Michigan-Mason Office, the bank's five other Dearborn offices, and to the 135 staff members who serve in the city. Afterwards he presented to Dr. Donald A. Shelley, executive director of The Edison Institute, the original telegram sent to Henry Ford by the State Banking Commissioner authorizing him to open the Dearborn State Bank on September 22, 1910. Forerunner of MNB's Michigan-Mason Office, the Dearborn State Bank ultimately became an initial part of Manufacturers when it was founded twenty-three years later by Mr. Ford's son, Edsel.

Dr. Donald A. Shelley, right, executive director of the Henry Ford Museum and Greenfield Village, is presented the original telegram sent to Henry Ford 50 years ago by the State Banking Commissioner. The telegram, authorizing Ford to open the Dearborn State Bank on Sept. 22, 1910, will be preserved in the archives of the Henry Ford Museum.

It is being presented by William A. Mayberry, chairman of the board of Manufacturers National Bank of Detroit, which marked 50 years of banking in Dearborn. Forerunner of Manufacturers' Michigan-Mason office, the Dearborn State Bank joined MNB when it was established 23 years later.

GM–Chrysler Extend New Car Warranties

General Motors has announced that effective with the introduction of its 1961 models the written warranty on General Motors passenger cars and trucks will be modified to provide for an extension of the present warranty plan to 12,000 miles or 12 months, whichever comes first.

This action renews and broadens a similar policy with General Motors dealers, the first of its kind in the automobile industry, pioneered by General Motors many years ago. The extension of the policy now provides for its becoming a part of the dealer's written warranty to the customer.

Chrysler Corporation also has announced an extension of its warranty policy on all new 1961 models. The new policy covers the first 12,000 miles, or 12 months, whichever comes first, according to Byron J. Nichols, group vice-president for automotive sales. Chrysler's previous warranty was limited to 4,000 miles or three months.

Similar action also has been taken by Ford Motor Company, American Motors Corporation and Studebaker-Packard Corporation to extend their warranties to the same period.

Comet Offers Many Options

(Continued from Page 95)

long, 54.5 inches high, and 70.4 inches wide. Effective headroom is 38.9 inches in front, and 37.6 inches in the back.

Station wagons, on a 109.5-inch wheelbase, are 191.8 inches long, 55.1 inches high, and 70.4 inches wide. Headroom and legroom are basically the same as the sedans.

Offers Air Conditioning

Sedans have a luggage capacity of 28.5 cubic feet, and station wagons have cargo space of 76.2 cubic feet.

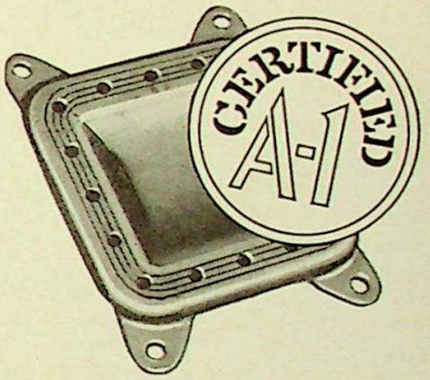
The Comet offers a wide variety of options and accessories as it did in 1960 models, but also provides an air-conditioning unit for the first time in 1961.

IT'S A FACT

YOU CAN DO BETTER WITH

DE-STA-CO

STAMPING QUALITY



Our customers are known for the quality of their products, and have associated themselves with us to maintain those high quality standards. We have been successful in doing just that for 45 years. If your products require the same high quality standards: it's time you checked what De-Sta-Co has to offer. Better your product—better your profits—better do it now!

FOR MORE FACTS
REQUEST OUR GRATIS ENGINEERING SERVICES

YOU CAN DEPEND ON DE-STA-CO

DETROIT STAMPING COMPANY
350 MIDLAND AVENUE
DETROIT 3, MICHIGAN
DE-STA-CO

Duco Introduced In 1923

(Continued from Page 104)

converted horse stables found that the finish was ruined in a couple of weeks. He explained this damage was done by the ammonia in the stable atmosphere.

Citing the 100 square feet occupied by each car during the long drying period as posing a critical problem as output rose, he said: "If we had carried on with paint, we'd have had a roof over Michigan."

But chemicals were to remove this road-block of the roaring twenties. In 1921 a "Paint and Enamel Committee" was appointed to end this bottleneck. They were told to find a finish that would decrease time from days to hours. They found that while the old fashioned varnish dried too slowly, the synthetic (cellulose nitrate) lacquer on the market dried too fast. But it bracketed the research of chemists of GM laboratories and duPont. The end result was a low viscosity nitrocellulose, that was patented by duPont as "Duco."

Removed Last Barrier

Introduced in 1923, it could produce a durable finish in about five hours, and seemed like a minor miracle to skeptics in the paint industry who had insisted "you just can't change nature."

"Duco" lacquers were able to withstand hot sun without cracking, were unaffected by water, made possible a wide range of colors and, most importantly, removed the last barrier to true low-cost, mass production, in turn resulting in lower prices.

Nitrocellulose lacquer remained the standard for automotive finishes until the early thirties, when "Dulux" synthetic resin enamel was perfected by duPont. This new lacquer was proved to possess the same order of weatherability as lacquer, slower drying speed and amazing toughness and flexibility.

duPont people point out that insofar as the car owner was concerned, there was virtually no difference in the performance or the appearance of the two coatings. Most owners didn't know—or care—whether it was lacquer or enamel giving the family car its sheen.

The basic difference was seen in manufacture. Lacquer dries by solvent evaporation, is basically an air-dried material and must be buffed to produce a high sheen, whereas the enamels are baked and require no buffing.

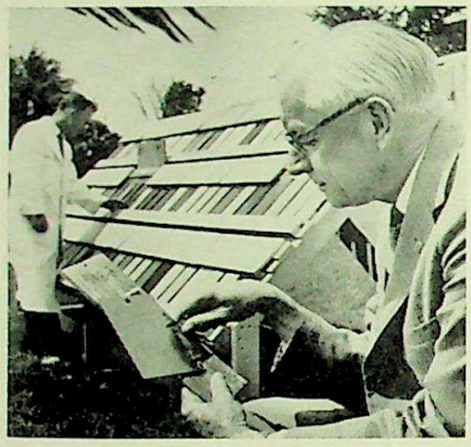
Lacquer or synthetic resin enamel was used for all factory finishing until 1954, when "Lucite" was introduced on some models. It was adopted by 1959 on all General Motors cars and its success was almost immediate. Today about half of all the automobiles produced in the United States are coated in the new acrylic material which gives the car owner a finish that retains its gloss much longer, is more stain resistant, and permits use of "glamor" colors that previously were not sufficiently durable.

While General Motors was building up the use of its acrylic lacquer, called "Magic Mirror" finish, its competitors were applying in 1958 models super enamels. All of these "wonder finishes" were claimed to require only washing in the first 18 months and less than routine care during the entire life of the car. In short—no need for waxing or polishing.

However, the 1959 cars had been out only a few months when the Society of Automotive Engineers was told at a March meeting a year ago that waxing or polishing of the new acrylic lacquers and super enamels, though not necessary, may be desirable.

That very week duPont announced formulation of a "protective coating" for these wonder finishes. Called "Car Shield," it was designed especially for use in the first year or 18 months to enhance the luster and provide a water-repellent surface that washes easier. When the paints eventually start to dull, a cleaner should be used, followed by wax or polish.

This advice was supported by a Ford Division specialist who said a coat of polish will make it easier to clean traffic film, industrial fallout, tree sap, etc., from the painted surface, adding, "therein lies its value rather than to prolong the life of the enamel."



Ralph Wirshing, General Motors expert with 40 years' experience in research on car finishes, inspects the original acrylic finished test panel after years of exposure to severe weather conditions at the GM Research Laboratories Florida Test Field. This particular panel has stood up well after seven years of exposure.

Metalflake Is Developed

And two months later—in mid-May of '59—the Johnson's wax people had sent a team into Detroit to tell automotive writers that waxing still is necessary to protect the new car finishes, and that surveys had shown that dealers and new car owners were recognizing this fact despite claims made by automobile manufacturers.

One of the newest developments in finishes was revealed this spring when Metalflake was revealed as possibly the next big change. The new treatment, that produces metallic colors, is a development of the Dobeckmun Co., Cleveland, a Dow Chemical division. It makes available a finish said to create " a kind of luminous, three-dimensional effect," with new hues and shades heretofore not included in the color spectrum of the industry.

It is expected to be added as an extra cost option a few years from now, its sponsors hopefully adding that they expect "conventional finishes to be rendered obsolete."

(Upholstery on Page 108)

Clark Offers New Merchandising Plan

Detroit-area firms considering purchase of new materials handling equipment now can try out the equipment for a free seven-day period under a new merchandising plan announced by J. A. Boley, general manager of Clark Equipment Company's Detroit sales and service. "A week under actual job conditions will show whether the equipment will do the job or if more or different machines are required," Boley said.

Under the plan, the buyer will provide a regular purchase order with an understanding between the buyer and dealer as to what is expected of the equipment. If the equipment does not meet expectations within seven days of delivery, it is returned, at no cost to the buyer.

Boley recently announced the promotion of two master mechanics — Bruce Hardwick and Paul E. Smith—to the position of field service salesmen. Hardwick will confine his activities to the Detroit metropolitan area while Smith will work out of the branch office in Flint serving the upstate area.

Also appointed to the sales staff is Glenn Johnson, Jr., as sales engineer. His territory will be St. Clair, Macomb and Oakland counties. Johnson had nine years of engineering background on Clark industrial trucks at the company's Battle Creek plant before transferring to Detroit.

B. HARDWICK

G. JOHNSON, JR.

Lewis Heads Trucking Association

The Michigan Trucking Association has elected Philip W. Lewis, of Grand Rapids, as its 24th president to succeed Herb Schindler, Jr., of Lincoln Park, who held that post for the past year. Lewis is president of Grand Rapids Motor Express.

Other new M. T. A. officials are: First vice-president, Donald P. Kipp, Detroit, president of Kramer Bros. Freight Lines, Inc.; second vice-president, Charles Cooper, Holland, president of Holland Motor Express, Inc.; secretary, James House, Jr., Essexville, partner in the firm of James House and Sons; and treasurer, J. H. Fles, Grand Rapids, president of Association Truck Lines, Inc.

Ford Introduces Own Fork Lift Truck

As one of the nation's largest users of lift trucks, Ford Motor Company has put its materials handling and engineering experience to work for others by introducing a new lift truck bearing its own name. Known as the Series 4000 Ford heavy duty fork lift, the new unit will be sold and serviced by 2,500 dealers of Ford tractors and equipment.

"In general manufacturing operations and other industrial operations, handling of materials accounts for from 25 to 90 per cent of the costs," pointed out L. E. Dearborn, general sales manager of Ford's Truck and Implement Division. "Cutting these costs can mean the difference between profit and loss in many types of operation."

Dearborn added: "The Ford fork lift is the result of a joint effort between Tractor-Mate, Inc., of Marshall, Mich., and our Ford engineering group to solve this profit-loss equation for manufacturers, warehouse operators, builders and contractors, loggers and members of other industries who need to move and stack heavy materials."

The Ford fork lift is equipped with either a gasoline or a Diesel engine of 172 cubic inches displacement. It is offered with four stacking heights—10, 12, 16 and 21 feet, and two- and three-stage masts. Loads of 4,000 pounds can be handled by the 10- and 12-foot lift trucks. For handling bulk materials and all standard size pallets and skid boxes, adjustable forks of 42- and 60-inch face plates are available.

Highly maneuverable, the Ford fork lift mast can be tilted hydraulically 6½ degrees forward and 13½ degrees backward, and the load can be shifted six inches from side to side by lateral movement of the forks.

Loads of 4,000 pounds are handled by Ford Motor Company's new fork lift, the first lift truck to bear the Ford name. It is being distributed through Ford's tractor dealers.

CAPITOL ELECTS PRESIDENT

Capitol Tool Products, Inc., of Oak Park, announces the election of Gene A. White as president, succeeding Frank A. Coogsdill, who has been named vice-chairman of the board. Bradley N. Brown has been elected treasurer.

GETS EUROPEAN ORDERS

Allied Steel & Conveyors, Detroit, a division of Sparton Corporation, has received substantial orders from two leading European automobile manufacturers for specialized automation equipment. The orders were placed by the Automotive Division of Fiat, at Torino, Italy, and by Volkswagonwerk GMBN, of Wolfsburg, Germany.

Complete ONE-STOP *Service*

Let us handle all your display and show problems—right from the beginning, and help you secure the maximum for each dollar spent.

DISPLAYS • EXHIBITS
TRAINING DEVICES
SALES PRESENTATIONS • ANIMATIONS
DECORATIONS AND FLOATS • COMPLETE
SHOW AND CONVENTION SERVICES...
PLANNING...PROMOTING...PRODUCING

DISPLAY & EXHIBIT COMPANY

1501 E. FERRY DETROIT 11, MICH. PHONE TR. 5-4700

RIVER RAISIN

CORRUGATED SOLID FIBRE

Containers

WEATHERPROOF BOARD

CORRUGATING MEDIUM

CYLINDER LINER

RIVER RAISIN PAPER CO

MONROE, MICH.

DIVISION OF UNION BAG-CAMP PAPER CORPORATION

union camp

Plants at... MONROE • EATON RAPIDS & BENTON HARBOR, MICHIGAN • CLEVELAND & SHARONVILLE, OHIO • WASHINGTON AND LANCASTER, PENNSYLVANIA

Car Interiors Grow More Glamorous

The hand of the chemist is found, too, in man-made textiles, finding increasing use in motor vehicles today.

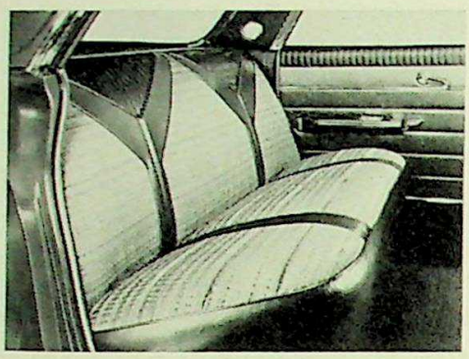
Of these fabrics, the Chemical Industry Facts Book observes that "their scientifically controlled uniformity is said to suit ideally the constant experimentation necessary for the development of today's cars. For example, almost as much textile fiber as rubber is used in the manufacture of tires. For other applications the various man-made fibers being developed are rapidly displacing cotton and animal fibers. The emphasis on color, better styling and easy maintenance has contributed to this end."

Leather In Early Days

One place where plastics take cover, but don't drop out of sight, is when they are used in the millions of yards of fabrics which upholster the modern motor fleet. Roughly six yards of synthetic fiber fabrics are used in every car.

In the early days it was leather. Without these synthetic materials, it has been pointed out by Mitchell Wilson, physicist turned author: "The quantities of natural leather required for automobile upholstery would be so enormous that beefsteak would be priced at only a few cents a pound, or far more likely, automobiles would be fewer and more expensive."

Well, other fabrics were used, and beefsteak didn't go to a few cents a pound. Years ago a good deal of pyroxylin coated fabric was used but the major deficiency of this material was cracking at low temperature.



Interiors of today's most luxurious cars are a blend of fine textiles and newly developed plastics—giving a wide variety of color and trim combinations.

Prior to the war the older cellulosics—rayon and acetate—were joined by what its producer, duPont, termed the first new, truly synthetic yarn—nylon. Postwar new fibers, like Dacron polyester fiber and Orlon acrylic fiber made their appearance.

Durability And Cleanability

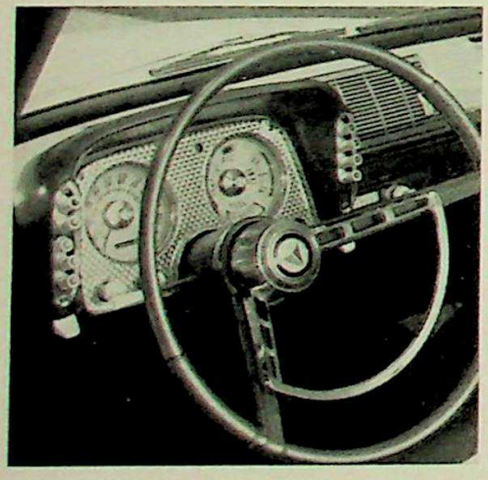
Today' vinyl coated fabrics, so widely used as headlining and upholstery materials, possess recognized durability and cleanability way beyond the natural fiber textiles of a bygone era. They are manufactured in a variety of grains and patterns over a wide range of colors.

Styling in upholstery fabrics for automobiles is notably advanced. Producers of coated fabrics submit to the car manufacturers samples of new grains (fabric, leather and abstract effects) and colors which their stylists have evolved each year. The adoptions that result are, generally speaking, bold and forward-looking. The same could be said as to serviceability and styling of synthetic fiber upholstery, notably nylon, which had its first success as an upholstery fabric in the automotive field, immediately postwar.

26 Pounds Of Plastics In 1961 Car

The automobile has been a large consumer from the very beginning of the plastics industry . . . the fastest growing segment of the chemical industry.

But it is in the past few years that the use of plastics and plastic materials in cars has shown its tremendous growth. They are widely used in accessory knobs and buttons, sun visors, side shields, steering wheels, bushings and bearings, instrument clusters, and many other applications aside from windshields, upholstery material and slip covers which we have previously discussed.



This interior view of the new 1961 Valiant is focused on the instrument housing, which is molded of Du Pont "Delrin" acetal resin. Light weight, resistance to corrosion and high temperature, plus strength and stiffness make Delrin ideal for a variety of automotive uses.

Usage figures reported by the Society of Plastics Engineers, Inc. place pounds of plastic per car at 11 pounds for 1956, 18 in 1958, 20 in 1959. Estimates for 1960 round out at 22 pounds and for 1962 at 26.

This is an ambulance, converted by the Shop of Siebert, Waterville, Ohio, from a standard Ford station wagon through use of Fiberglas-reinforced plastic materials.

More Use In Europe

In passing it is noted that Volkswagen now uses 40 pounds of plastics per car, emphasizing the point that European car makers seem to be way ahead in the use of plastics.

The first commercial plastic developed in the United States was celluloid—a cellulose nitrate plastic developed in 1868 by John Wesley Hyatt. He was the founder in 1892 of the Hyatt Roller Bearing Company.

Another major step in plastics came in 1909 when Dr. Leo Henrik Baekland introduced formaldehyde resins. From his name was coined the trade mark Bakelite for the first phenolic resin in this country. One of the first large scale users of Bakelite—and the first major use of plastics in cars—was in 1910 when Delco specified the material for distributor heads in lieu of hard rubber.

The second major plastics application was in the use of celluloid for side curtains, which were standard during the 1920's. When the introduction of sedans and coupes eliminated side curtains around 1930, there was a brief hiatus in plastic usage so far as autos were concerned.

Then came its usage in the early 1930's in safety glass, and a new interlayer material in 1936, followed quickly by the polyvinyl butyral resin still used in safety glass.

Colored Steering Wheels

In the 1934 models, Buick and Cadillac offered steering wheels injection molded from cellulose acetate, replacing hard rubber and making colored steering wheels a long-awaited reality.

Plastics, such as duPont's "Lucite" acrylic resin, began replacing colored glass for tail lamp lenses and reflex

(Continued on Page 112)

PERSONNEL CHANGES

Keith N. Phillips as personnel manager of the Ludington Division of Dow Chemical Company.

George J. Elder, active in the Detroit securities and investment field for 35 years, has joined Wm. C. Roney & Co., members of the New York and Detroit Stock exchanges.

Howard F. Carr, former senior partner of Carr, Logan & Co., Detroit securities firm, has joined Goodbody & Co., members of the New York Stock Exchange in the latter's Detroit office.

Carlton E. Spitzer as director of public relations for Wyandotte Chemicals Corporation.

H. S. Wagoner, for ten years vice-president of sales for Stroh Brewery Co., Detroit, has been named to the new post of vice-president of marketing, and **Charles C. Davis, Jr.**, becomes vice-president of sales.

Robert P. Scherer, Jr., has been appointed chief executive officer of R. P. Scherer Corp., Detroit, gelatin capsule manufacturers, with the titles of executive vice-president and general manager.

Larry L. Jones to the newly created post of sales manager-trailers for the Sparton Railway Equipment Division, Sparton Corporation, Jackson.

Milan J. Kralik as assistant auditor of City Bank, Detroit. He has been with the bank since 1950.

Max M. Roensch, assistant chief engineer in charge of experimental operations for Chevrolet, is the newly elected chairman of the Detroit Section, Society of Automotive Engineers, for 1960-61.

Harry G. Bowles, controller for Burroughs Corporation, Detroit, has been promoted to vice-president and controller.

John T. Davis as advertising manager of McCord Corp., succeeding Edwin O. Bodkin, retired.

Earl R. Fiene as director of automotive original equipment sales for The Electric Autolite Company.

David E. Wilcox, treasurer of Rinshed-Mason Co., Detroit, has been named a director of the company.

Julius Pochelon, of Kenower, MacArthur & Co., is the newly elected president of the Bond Club of Detroit.

Joseph B. Davis, C. L. U., Detroit agent for the Home Life Insurance Co., has been elected to the board of trustees of the National Association of Life Underwriters.

Donald Keils as general superintendent of Valley Metal Products Company, Plainwell.

J. Clifford Brinkman as secretary-treasurer of the McCord Corp., Detroit.

Donald B. Smith as manager of procurement for the Van Dyke Works of Thompson Products, Michigan Division of Thompson Ramo Wooldridge, Inc.

Ralph E. Karth as national sales coordinator for The Kemp Corporation, Birmingham, manufacturers of a lightweight steel ceiling panel.

Chris J. Edmonds as Cleveland regional public relations manager for General Motors Corp. He formerly was assistant director of public relations for Buick.

Paul S. Mirabito has been promoted by Burroughs Corporation, Detroit, to vice-president in charge of the company's Defense Contracts Organization. He had been general manager of that activity since October, 1955.

Walter O. Briggs has joined the consumers products group of MacManus, John & Adams, Inc., as an assistant account executive.

Alvin S. Baer has joined Truscon Laboratories of Detroit as vice-president.

Jay W. Courage has been promoted from vice-president-public relations to executive vice-president of Dudgeon, Taylor & Bruske, Inc., Detroit. He continues as account executive for R. C. Mahon Co.

Kenneth P. Locke as an assistant controller of Detroit Edison Company.

H. F. Froehlich as works manager of the Royal Oak equipment plant of Ford Motor Company's Tractor and Implement Division.

Clifford Alderson as assistant sales manager of Goebel Brewing Co., Detroit.

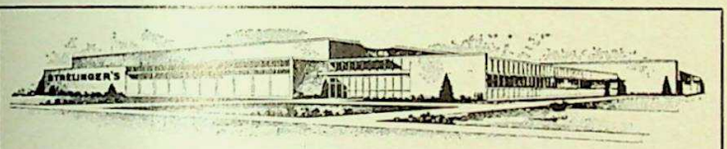
Walter Hanstein, Jr., as associate director of engineering for Burroughs Corporation, with headquarters in Detroit.

William H. Morrin as general sales manager of Alpha Press & Machine Co., Inc., Detroit.

Charles L. Roehm as advertising manager for Ward's Automotive Yearbook.

Ralph E. Minaker, manager of Manufacturers National Bank's branch office at Maple and Telegraph roads since 1956, has been named to the same post in the bank's newest facility at 4057 West Maple road, Bloomfield township.

C. J. Cowles as director of professional relations for Parke, Davis & Co., succeeding **John A. MacCartney**, recently named director of public relations.



ASK THE MAN FROM STRELINGER'S

- MACHINE TOOLS
- METALWORKING MACHINERY
- POWER TOOLS • CUTTING TOOLS
- SAFETY EQUIPMENT
- AIR & HYDRAULIC EQUIPMENT
- BOSTON GEARS, REDUCERS, RATIOMOTORS
- DODGE TRANSMISSION
- SIMONDS GRINDING WHEELS
- 3-M ABRASIVES and INDUSTRIAL TAPES
- YALE HOISTS • DELCO MOTORS
- CLEVELAND TRAMRAIL CARRYING SYSTEMS
- INDUSTRIAL SUPPLIES

THE CHAS. A. STRELINGER CO.

Machine Tools — Industrial Supplies — Established 1884

31855 Van Dyke Ave., Warren, Michigan
Between 13 and 14 Mile Roads

Plenty of Parking Space Phone JEfferson 9-6000

CHAS. T. BUSH, *Chairman of the Board*
JOHN N. FAILING, *Vice Pres. & Sales Manager*

We Welcome The Opportunity

To Serve Industry and Its Employes

★ ★ ★

DOWNRIVER'S MOST PROGRESSIVE

Resources 97 Million Dollars

ELEVEN BANKING OFFICES
DRIVE-IN FACILITIES

Security Bank

ALLEN PARK • ECORSE • LINCOLN PARK
SOUTHGATE • TAYLOR

DUnkirk 2-0500

Member: Federal Deposit Insurance Corporation
Federal Reserve System

U. S. Department of Commerce—Your Business Ally

PERSISTENT LABOR SURPLUS AREAS

In order to assist more effectively in certain areas of the country with substantial labor surplus and particularly where such conditions persist, the Federal Government has established additional procedure to aid these areas.

WM. T. HUNT

Definition of Labor Surplus Areas. Areas of substantial labor surplus are those having unemployment levels of six per cent or more, discounting seasonal and temporary factors and which have been so classified by the Department of Labor. Within this group, the Department of Labor has identified as persistent those areas in which the annual average unemployment rate has been:

(1) At least 50 per cent above the national average for three of the preceding four calendar years; (2) at least 75 per cent above the national average for two of the preceding three years; and (3) at least 100 per cent above the national average for one of the preceding two calendar years.

Preference in Federal Procurement and Construction. The Office of Civil and Defense Mobilization has revised Defense Manpower Policy No. 4 to provide that the preference given to surplus labor areas under the policy for purposes of Government procurement and facilities construction or expansion will be offered first to areas of persistent, high unemployment levels. Government-wide procurement regulations and various agency regulations have been, or are being, revised so that this policy will be implemented in all Federal procurement and construction.

A further revision encourages prime contractors to award subcontracts to firms which will perform a substantial portion of the production involved in the persistent surplus labor localities. A change in certification procedures provides that the national office of the Department of Labor will issue certificates of eligibility to firms in localities too small to be regularly classified as to unemployment status. These certificates are now being issued by State Employment Security Officers.

The Veterans Administration has changed its procurement regulations to permit an additional six per cent differential (a total of 12 per cent) under the Buy American Act in favor of areas of persistent unemployment.

The Housing and Home Finance Agency has revised its administrative regulations concerning the use of funds under the public facility loan program waiving limitations as to population and type of project and giving priority to the processing of public facility loan applications for public works which will improve local employment conditions on a long-term basis. Consideration will be given to the extent to which a proposed project is a necessary factor to assure construction of a new plant or a new industry or expansion or continuance of present industries.

Increased Area Development Activity. The Department of Commerce has appointed an area development specialist for each of six Commerce Field Offices located in persistent labor surplus areas. Inasmuch as parts of Michigan, Illinois and Indiana come within the surplus labor category, an area development specialist has been appointed to work out of the Detroit Office and serve these three areas. He is Dr. William F. Jewell, III, of Ann Arbor. Dr. Jewell has been head of area development in the Detroit Metropolitan Area Regional Planning Commission and has had considerable other experience with the government and private industry in connection with area and community development. Dr. Jewell obtained his degrees at the University of Michigan and Michigan State University. Our office is therefore now much better equipped to cooperate with all concerned with area development and increasing employment.

The Commerce Department, in cooperation with certain other agencies of the Government, is proceeding with a pilot project to secure a voluntary registration of production facilities in one of the persistent labor surplus areas. Firms wishing to bid on federal contracts or do subcontract work for major federal prime contractors are submitting information on their production capabilities. This activity is being carried out in cooperation with state, local and private groups which have requested such assistance. The success of this pilot venture may determine to a large measure the feasibility of this approach and its applicability to other labor surplus areas.

Accelerated Federal Procurement and Construction. Lack of space prevents detailed analysis of current and planned expenditures for labor surplus areas. However, the Post Office Department has given special attention to chronic labor surplus areas in its program of construction and modernization of postal facilities.

The Department of Defense reports, as an example, that for the first quarter this year the net value of supply, service, and construction prime contracts of $10,000 or more awarded in all labor surplus areas totaled $285 million. Of these, the persistent labor surplus areas received $163 million.

The Federal Aviation Agency indicates that steps are being taken to expedite aviation facilities and airport construction work in these distressed labor areas. Field studies are being conducted with a view to starting work for fiscal year 1961 as rapidly as possible.

The Atomic Energy Commission reports prime and subcontracts of $25,000 and over placed in persistent labor surplus areas in the period March-May, 1960, totaled $4.7 million. Ten of these, totaling $2.3 million, were in major persistent areas of unemployment, while the remaining nine, totaling $2.4 million, were in smaller persistent unemployment areas.

The Small Business Administration is giving special attention to programs involving loans for labor surplus areas.

Manager, Michigan Field Office
United States Department of Commerce
Federal Building, Detroit

William W. Tanney

MEMBER: SOCIETY OF INDUSTRIAL REALTORS

INDUSTRIAL

REAL ESTATE APPRAISALS

FOR

CURRENT MARKET VALUE

INCOME TAX MORTGAGE LOANS

WOodward 1-7115

765 PENOBSCOT BLDG. DETROIT 26, MICHIGAN

Markets Pre-Cured Neoprene Lining

The Udylite Corporation, Detroit, has announced a new synthetic rubber lining pre-cured by a radio frequency energy process. The synthetic rubber lining material is a pre-cured neoprene, marketed by Udylite under the trade name of CPD-10. It has been used successfully in electroplating tanks, chemical storage tanks, feed water tanks, flow tubes, on hulls of ships and on dredging equipment.

Additional market areas are expected to include railroad tank cars, marine shipping, trailer tanks and other applications that require abrasion and corrosion resistance.

CPD-10 has been used successfully to combat resistance to abrasion, oil, ozone, weathering, chemicals, flame, oxidation and heat up to 250 degrees F. In some applications, it has withstood temperatures up to 400 degrees F.

CANADA . . . NEWS AND VIEWS

STOCK MARKET GYRATIONS

By J. M. PICKELL

Devon Smith, financial editor of The Toronto Telegram is, we think, one of the most refreshing financial writers over the border. And, we think, you will agree it is a little difficult to be refreshing with stock markets and the economy of North America gyrating.

Under the heading "NO TOE IS THAT BIG" Mr. Smith wrote:

"Mr. K did not put the stock market down yesterday. The arrival of Mr. Khrushchev in New York could hardly have triggered a surge of selling from stock traders who had watched his approach without remarkable uneasiness.

"There are many explanations which could be advanced more logically than the magic touch of Mr. K's foot on Manhattan Island.

"The most likely, and least dramatic, would be that stocks have been over-valued and that a normal amount of selling failed to meet a corresponding volume of buying. This is a rather common thing on the stock market, happening several times a day and many times a week in each individual security.

"The unusual nature of yesterday's action would require only the addition of grossness to the over-valuation; and many a street technician has intimated that it was there.

"The coincidence of Mr. K's touching his shoe to American soil with the market fall is the stuff of which superstitition is made. About the best that can be said for a connection between the two is that both events were brought to the attention of millions on the same day.

"But Mr. K has not the power, in peace or war, to make the U.S. economy shudder with his toe."

JOHN RODGERS WILL BE CALLING.

"We believe multi-lateral traffic in investments is as important as in export trade—we must invest in each other."

"We will build the factories and either rent them cheaply or sell them back to the company over a period of years for far less than cost—we even give direct grants that are not repayable if a company wants to move part of its plant from a poorly developed area to another district where unemployment is high."

No, such enticements are not made by Southern States. They were made by John Rodgers, Parliamentary Secretary to the Bristish Board of Trade, to a press conference in Toronto, in an endeavor to encourage Canadian investment in the U.K.

Mr. Rodgers will shortly visit the United States with the same inducement.

RATHER SURPRISING

Considering the growth of credit unions in every state on this side of the border, it is rather surprising to note that the charters of 37 credit unions in Ontario have been surrendered so far this year, compared to three in the same period of 1959.

NOTE TO ENGINEERS AND LAWYERS

You have, even as we have, paid bills to doctors and surgeons, to engineers, architects and lawyers, to nurses and, indirectly, to farmers and fisherman and, whether you know it or not, to pensioners. Therefore, if you wish, you can compare Canadian prices with what you have paid. In Canada, doctors and surgeons have moved into the top-income bracket among the professions, with an average income of $15,264. In the previous year, doctors earned a lower average than engineers, architects and lawyers,

(Continued on Page 114)

TRITE

If you live hundreds of miles from a target area, a home shelter might help.

—Dr. F. M. Kelly, nuclear physicist at University of Manitoba.

It may be that we have more to fear from the doubters within our ranks than from the Communists who dwell among us and work against us.

—Charles H. Peters, president of the Montreal Gazette

Hall Lamp Will Make Auto Horns

The C. M. Hall Lamp Company, Detroit, is tooling up to produce auto horns, in addition to mirrors, head and taillights and other automotive items, it is revealed by Harry D. Hirsch, president.

Hirsch said the horns, which will be available to the industry in the 1962 model year, will be made in the company's plant at Clinton, N. C. Output of mirrors at the Clinton plant has reached a new high of 250,000 a month, Hirsch disclosed.

The United States patent office has granted DeVlieg Machine Co., Royal Oak, a patent on a newly-developed tool grinder. The new grinder is said to be the first unit developed thus far that is able to grind single-point cutting tool profiles geometrically correct to precise gage accuracy.

Michigan's 43 canning plants have an estimated annual payroll of $10,388,000, according to the National Canners Association and the Can Manufacturers Institute.

CANADIAN MANUFACTURING FACILITIES AVAILABLE

Large Canadian manufacturing firm, located in Windsor, Ontario, wishes to contact American company desirous of entering Canadian market. Factory space and capital available to undertake the manufacture, assembly and distribution of any proven product presently being manufactured and sold in the United States.

Apply to our Advertising Agency:

ELTON M. PLANT ADVERTISING LTD.

586 Ouellette Avenue, Windsor, Ont.

FREE

BOOKLETS AND PAMPHLETS FOR YOU WHO WISH TO DO BUSINESS IN CANADA

★**ATTRACTIVE BOOKLET** showing: transportation facilities (water, road, rail and air); skilled labor force; types of industry; map of Greater Windsor; growth figures and other pertinent data.

★**DATA SHEETS ON GREATER WINDSOR** containing information you will want on how to do business in Canada.

★**PAMPHLETS** showing the types of buildings for Lease or Sale in Greater Windsor. These show floor plans and exterior pictures.

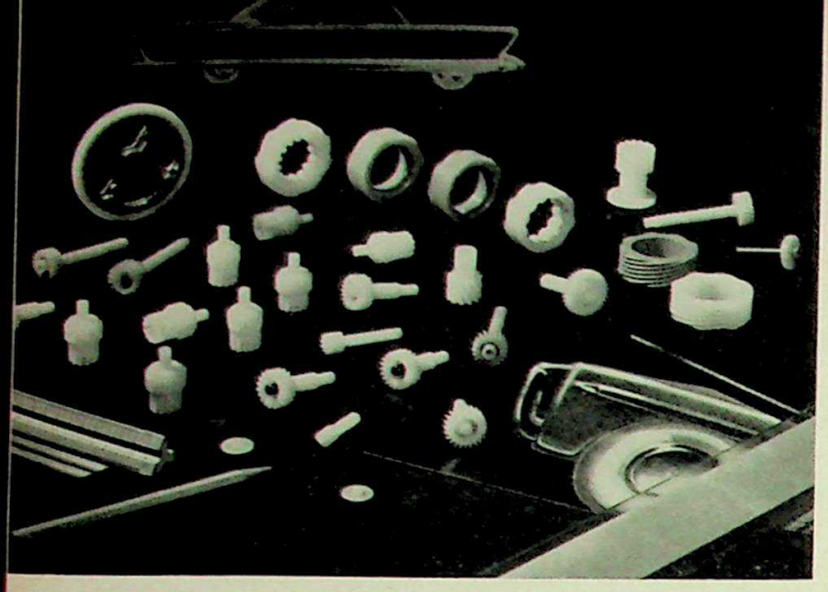
★**A DIRECTORY OF AUTO PARTS MANUFACTURERS** giving full information, addresses and phone numbers.

★**A 1960 DIRECTORY OF INDUSTRIES IN GREATER WINDSOR.** This gives the manufacturer's name, product, company officers and number of employees. It is cross-indexed by products. (Because of the expense of developing this book, we are obliged to charge for this one item—the cost is only $2.00).

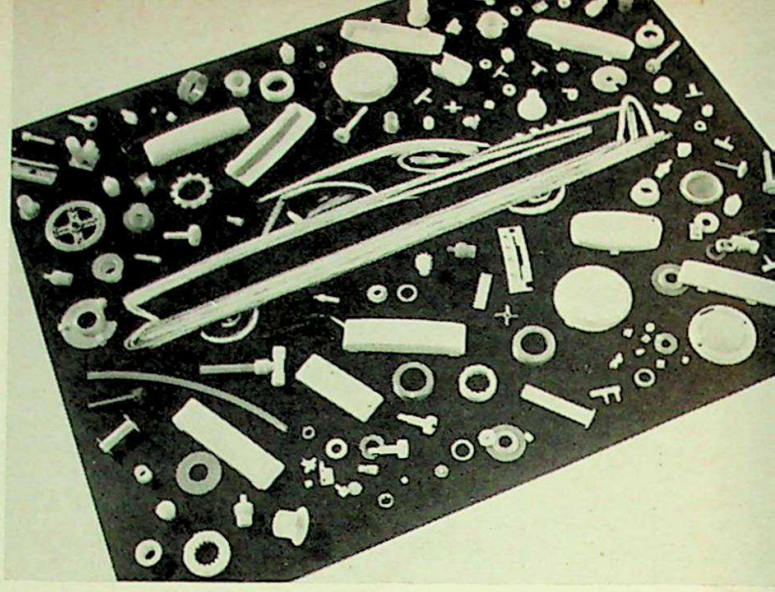
For any of the above, or other information about Greater Windsor, phone or write Murray A. Elder, Industrial Commissioner.

GREATER WINDSOR INDUSTRIAL COMMISSION

369 Pelissier St., Windsor, Ontario



Gears for speedometers, windshield wipers, radio antennae, and other parts are a major automotive use of nylon resin. Over 250 different parts of Zytel nylon resin are used in various 1961 model automobiles.



Small parts made of Zytel nylon resin fill dozens of important roles in passenger car building, such as dome lamp lenses, door latch wedges, carburetor parts, tubing for air suspension systems, gears and bushings.

New Plastics Developed

(Continued from Page 108)

reflectors in 1937. This material became standard for these applications in 1938.

Nylon resins such as duPont's Zytel, currently used in over 250 automotive applications, first oppeared in passenger cars around 1949. Initial applications were in the bushing and bearing field (brake and clutch pedal bushings, etc.) and as gear (speedometer drive take-off gear, etc.).

Since plastics first were considered for cars, the industry has adopted the new materials developed by the chemical industry whenever the new materials suited their requirements. The specifications a new automotive plastic material must meet are rigid. They must be available in large quantity, low in price, durable under extreme weather conditions, have long life, and lend themselves to large scale production. As plastics which meet these specifications are developed, they are put to use in the modern automobile.

Many Man-Made Materials

It has been a story of development—of many varied man-made materials—divided into many groupings with polysyllabic names.

DuPont's Dr. John D. Young, in a press conference in Detroit about a year ago, emphasized two major factors: First, that plastics permit extraordinary efficient designs that are impossible in other materials, and second, that they can perform this task at less ultimate cost to the manufacturer.

He added that in the public mind they are all too often considered simple substitutes—produced in huge volume and at a low cost — easily made, and easily broken.

Fuel Lines Of Plastic

"Ironically, the plastic industry's long-term experience has been at the opposite pole. Engineering plastics are difficult and expensive to manufacture. Their cost is often several times that of metals and other traditional materials with which they compete. The fact that they do find wide markets, regardless of price, carries an inescapable moral," he said.

By 1963, if not sooner say auto engineers, plastic will be standard material for fuel lines (nylon) and possibly entire gasoline tanks, instrument housings and complete dashboards.

Another recent development has been the use of phenolic resins as the binder for brake linings. Some brake linings now are being glued in place with synthetic resin adhesives.

It is reported one auto maker is testing a plastic part now made from steel on all cars which, if adopted by all car makers, would call for some 40 million pounds of plastic per year.

With the trend to visibility, the plastic men see designers eventually going to complete wrap-around tops. When they do, the job might well be given to a tough clear plastic.

More Powerful Batteries Widespread

Every step in the manufacture of the lead-acid storage battery involves chemical problems. Its construction uses such chemical products as sulfuric acid, lead peroxide, plastics, asphalt, lead and antimony.

Much research has been carried out on batteries, but so far no other type of battery has shown promise of replacing the present lead-acid type. It is a chemical problem to develop other types of batteries—lighter, smaller, longer lived, and using less strategic materials.

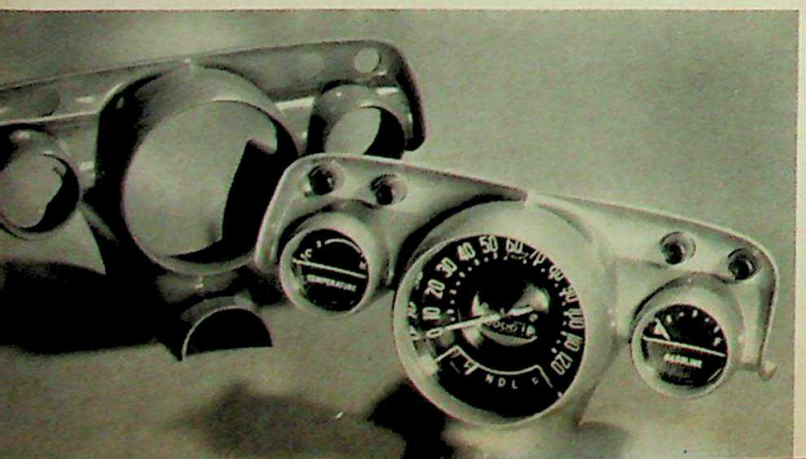
Battery improvements to meet increased demands has not lagged but most changes are not visible to the motorist. However, one notable milestone was the switch in 1953 V-8s of some makes (Cadillac, some Buick and Chrysler models particularly) to a 12-volt system. Previous attempts in the industry to use other than 6-volt systems had always failed for some reason or other, but when the switch was made engineers agreed the trend toward higher voltage would increase in the years to come.

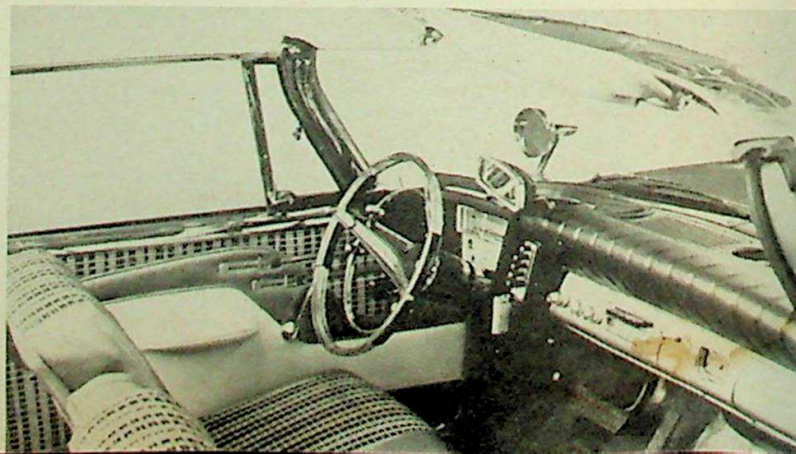
The trend resulted in GM (only) having 12-volt on all its makes and Ford and Chrysler announced them for their 1956 model line.

Battery cranking ability — especially needed at low temperature—is a function of the number of positive and negative plates per cell or plate area, and cranking ability varies directly with the plate area.

Plate area of the typical 1925 battery was only 1,815 square inches. Little was

These two photos show an automobile instrument cluster (left) and the front seat of a passenger car with the crash pad on the dashboard, seat upholstery and side paneling upholstery covered mainly with vinyl sheeting. The cushion material in the crash pad is a plastic foam, and the steering wheel, instrument knobs, radio and heating grills are plastic.





required of the battery in those days, engines being smaller and summer driving predominant.

But passenger cars with larger engines and year-round operation (plus demands of added accessories) have demanded more performance from the battery. Plate area thus was increased to 2,268 square inches in 1954, 2,722 in 1955 and to 3,327 in '58. To keep the unit in the same size was achieved by developing thinner plates and thinner separators.

Plates of the '25 battery were 0.130 inch thick vs. 0.065 recently and separator thickness was reduced 32 per cent or more.

Engineers believe that present experimental batteries, with even thinner plates and with reduced thickness of the hard rubber case, indicate that adequate power of the battery in the same size package will be provided for several years to come.

Keeps Battery Charged

In explaining the 12-volt system to motorists upon its introduction, it was pointed out by engineers that it keeps the battery more closely charged at full capacity and in the case of high compression engines results in quicker starting in cold weather. On high compression engines it also insures a more efficient operation of the entire ignition system.

The 12-volt system requires a different generator, ignition wiring, starter, light bulbs and other components. While the 12-volt system supplies more voltage at the spark plug, it does not affect the heat range of the plug itself.

The 12-volt system gives a higher generator output at lower speeds than did the 6-volt, meaning to the average motorist that on slippery, icy streets, the necessary load for continued car operation is obtained at a lower car speed. A car equipped with a 6-volt system had to travel at 27 miles per hour to supply its electrical load vs. 20 miles per hour for a 12. So there's seven times as much energy available for storage in a 12-volt, and it also provides 30 per cent more storage capacity for this available energy with only five per cent increase in battery size.

From the above, you can see that the hand of the chemist is in much of the car. One way to look at it, once you take the metals from a car, just about everything else can be classified as chemical products, including of course, synthetic rubber. Or, next time you sit behind the wheel, look around you—you will be surrounded literally, by chemical products.

CUTS CEMENT PRODUCTION

Huron-Portland Cement Company has announced a production schedule cut at its Alpena mill because of the reduced demand for cement. The production cutback will cause the layoff of some 150 cement workers and seamen as clinker-producing facilities will be reduced 15 per cent and one of its fleet of lake vessels taken out of service.

Evolution Of The Wheel

(Continued from Page 39)

ward smaller wheels began. At this time riveted wire wheels were prominent also. During the late 1920's, signs began to appear that the wood wheel was to fade completely from the automotive scene.

Disc-type all steel wheels were perfected by 1940 and were used extensively on trucks. This type wheel was standard equipment on trucks of World War II.

The early 1950's saw stylists return the wire wheel to limited use for styling purposes and the late 1950's marked the beginning of the present trend toward lighter and smaller metal disc wheels.

Commonwealth Plans 12½% Stock Dividend

Stockholders of the Bank of the Commonwealth, Detroit, will be asked at their annual meeting on Jan. 17 to vote on a proposal calling for the payment of a stock dividend of one new share for each eight shares held on the dividend paying date, which probably will be in January, it is announced by Howard P. Parshall, president.

COMET PRODUCTION BOOSTED

Ben D. Mills, Ford Motor vice-president and general manager of the Lincoln-Mercury Division, reports that production of Comets has been advanced to 1,200 a day. The Division will build 31,000 in October, as against a little over 22,300 in September.

MICHIGAN MANUFACTURER
and
FINANCIAL RECORD

New Subscription Order

Please Send MICHIGAN MANUFACTURER AND FINANCIAL RECORD

Name _____ **Title** _____

Company _____

Address _____

City _____ **State** _____

☐ **One year $5.00** ☐ **Send invoice**

☐ **Two years $7.50** ☐ **Remittance enclosed**

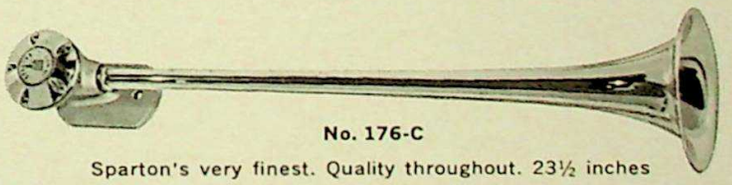
☐ **Three years $10.00**

Special rates apply to orders combining subscription and The Directory of Michigan Manufacturers

Published Monthly By
MANUFACTURER PUBLISHING CO.
8543 Puritan Avenue
Detroit 38, Michigan **UNiversity 4-9388**

***New!* from *Sparton*—**
THE STRONG SOUND IN TRUCKING!

Here are two new ways to brighten the looks of your trucks, lighten the load on your drivers. Sparton's new *Powertone air horns* give you more for your money. Long life . . . Beauty . . . Top quality. Convince yourself. See them and hear them.

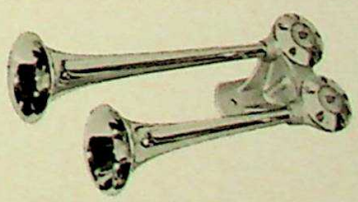


No. 176-C

Sparton's very finest. Quality throughout. 23½ inches of gleaming beauty. A voice with authority.

No. 275-C

Dual air horn, brilliant chrome finish. Horizontal diaphragm, no dirt or dust. Here's shine with strength.



Other models available in silver finish.
For complete details on Sparton's new line of Powertone air horns, write:

***Sparton* AUTOMOTIVE**
Division of
SPARTON CORPORATION • Jackson, Michigan

• CONSTRUCTION •

*Items selected from daily building reports issued by the Builders and Traders Exchange, Detroit.

*Booms Construction Co., Bad Axe, was low on its bid of $124,000 for a new building for the Univrsal Enginering Co., Bad Axe.

*Swanson & Associates, Inc., Bloomfield Hills architects is preparing plans for an infirmary Building at Plymouth for the Michigan Department of Administration. e

*Plans are being prepared by Swanson & Associates, Inc., Bloomfield Hills architects, for a $1,200,000 Industrial and Fine Arts Building at Ypsilanti for Eastern Michigan College.

*Theodore Rogvoy, Detroit architect, is preparing plans for a $2,750,000, 6-story office building on East Blvd., Flint, for Wm. Zeckendorf, New York.

*Plans are being completed by Swanson & Associates, Inc., Bloomfield Hills architects, for a $1,500,000 Library Building at Rochester for Michigan State University.

*Wm. H. Odell, Detroit architect, is preparing preliminary plans for a $500,000 parking structure on Ferris Street for the City of Ypsilanti.

*Theodore Rogvoy, Detroit architect, is preparing preliminary plans for a $1,250,000 Bridgeport Commercial Development on Dixie Highway & East King Road for A. F. Martin.

*Preliminary plans are being prepared by Theo. Rogvoy, Detroit architect, for a $1,500,000 sales center—Orchard Lake Road & 13-Mile Road, for Orchard Sales Center.

*John H. Burgess, Battle Creek architect, is preparing plans for an $800,000 Senior Citizens Home at Battle Creek for Senior Citizens Residence, Inc.

*J. A. Utley Co., Royal Oak, has been awarded the general contract for an addition to Building #23 at Lansing for Oldsmobile Division, General Motors Corp.

*Plans are being completed by Charles M. Valentine Associates, Marysville architects, for a $500,000 office building at Albion for Cecil Runyon.

*Bids are due October 25 at the office of Bernard J. DeVries, Muskegon architect, for a control office building at Durand for General Telephone Company of Michigan.

*Plans are being prepared by Earl G. Meyer, Detroit architect, for the $2,225,000 Murphy Junior High School at Howell Park for the Detroit Board of Education.

*Seth B. Giem & Associates, Kalamazoo, were the low bidders for a residence hall at Western Michigan University, Kalamazoo, for the Michigan State Board of Education, on a bid of $1,354,700.

*Plans are being completed by Pellerin & Daubresse, Inc., Detroit architects, for a $4,000,000, 12-story new co-op apartment building at 8300 East Jefferson Ave., for C. W. Babcock & Sons.

*G. E. Diekema, Kalamazoo architect, is preparing plans for a $400,000 clubhouse and lodge for the Elks Country Club, Kalamazoo.

*Preliminary plans are being prepared by Smith & Smith, Royal Oak architects, for a library and municipal building for the City of Clawson.

*Ralls, Hamill & Becler Associates, Livonia architects, are preparing plans for a new industrial plant in Detroit for Savair Products Co.

*Coombe & Lyman, Dearborn architects, are completing plans for a $200,000 addition to a steel warehouse in Dearborn for Furniture Capital Truck Lines.

*J. A. Utley Co., Royal Oak, was the low bidder at $923,000 for two hangar buildings at Detroit Metropolitan Airport for Wayne County Road Commission.

*Wold & Bowers, Grand Rapids architects, are preparing plans for the $600,000, 110-residence Pilgrim Manor at Grand Rapids for Pilgrim Manor Corp.

*Plans are being completed by the U.S. Army Engineers, Detroit, for a $2,000,000 dredging project on the west approach to locks at St. Marys Falls Canal.

*Plans are being prepared by Commonwealth Associates, Jackson architects, for a $1,500,000 service building at Jackson for Consumers Power Co.

*Charles Lane & Associates, Ann Arbor architects, are completing plans for a $4,222,000 junior high school and $200,000 pool at Lansing for the Waverly School District.

*Erickson & Lindstrom Construction Co., Flint, was the low bidder at $1,287,444 for a new building at Camp Copneconic, Flint, for the Flint Y.M.C.A.

*Preliminary plans are being prepared by Lewis J. Sarvis, Battle Creek architect, for a new civic center for the City of Battle Creek.

*Commonwealth Associates, Inc., Jackson architects, is preparing plans for a $1,500,000 medical care building at Jackson for Jackson County Medical Care Building.

*O'Bryan & Knapp Associates, Grand Rapids architects, are preparing plans for a $300,000 food market in Grand Rapids.

*Preliminary plans are being prepared by Stickel & Moody, Inc., Birmingham architects, for a 100-unit motel at Ten-Mile & Northwestern Highway, for Howard Johnson.

*Preliminary plans are being prepared by Palmer & Schoettley, Detroit architects, for the $2,500,000 conversion of Finney School into a senior and junior high school for the Detroit Board of Education.

*Tarapata, MacMahon, Inc., Bloomfield Hills architects, is preparing preliminary plans for a commercial development in Rochester for Howard Keating.

*Smith, Hinchman & Grylls, Associates, Inc., Detroit architects, has been selected to draw plans for the new $2,196,500 Charles F. Kettering High school, Van Dyke & Ford Expressway, for the Detroit Board of Education.

*Detroit Board of Education has selected Linn Smith & Assoc., Birmingham architects, to draw plans for the new $2,232,525 Joy Junior High School.

*Palmer & Schoettley Associates, Detroit architects, are preparing plans for a new home office building in Plymouth for Detroit Mutual Insurance Co.

*O. W. Burke Co., Detroit, was low bidder at $2,669,000 for the Louis J. Seitz Junior High School in Wyandotte for Riverview Community School District.

*Preliminary plans are being prepared by O'Dell, Hewlett & Luckenbach Associates, Birmingham architects, for a $600,000 parking structure on Thayer Street, Ann Arbor, for University of Michigan.

*General contract for a new Hyper-Pure Silicon Plant at Hemlock for Dow Corning Corp. has been awarded to Consolidated Construction Co., Bay City.

*Preliminary plans for a $2,000,000 parking garage on Macomb Street for City of Detroit Municipal Parking Authority are being prepared by Wm. H. Odell, Detroit architect.

*Erickson & Lindstrom Construction Co., Flint, has been awarded the general contract on its bid of $1,329,444 for an addition to the Saginaw General Hospital.

*Preliminary plans for a new branch office of Detroit Bank & Trust Co. at Woodward & Oakland, Birmingham, are being prepared by O'Dell, Hewlett & Luckenbach, Birmingham architects.

*The Christmas Co., Lansing, has the general contract, on its bid of $1,305,500, for a general classroom and office building at East Lansing for Michigan State University.

*Louis C. Kingscott & Associates, Kalamazoo architects, are preparing plans for a $1,800,000 female center building at Kalamazoo State Hospital for Michigan Department

Dart Offers Many Options

(Continued from Page 74)

tioning vents; deep-dish steering wheel; front vent windows; outside door latches that open with finger tip ease.

Other options include: "Child-Guard" vacuum-powered locks that operate from an instrument panel switch; an easy-to-operate heater; four-light flasher warning system; transistorized radio with rear seat speaker; remote control outside rear-view mirror; power steering, brakes, seats, window lifts and station wagon tailgate windows; seat belts and padded instrument panel; station wagon roof luggage rack; windshield washers; and tinted glass for all windows.

COMMERCIAL REPRODUCING COMPANY

Photostatic Copies • Glossy Stats
Ad Blowups • White Prints
Direct Positive Photocopies

Short Run Offset Duplicating

WO. 2-6428

212 W. Lafayette Ave.
Opposite Post Office
Detroit 26, Michigan
Dependable Service Since 1920

Canada—News and Views

(Continued from Page 111)

who still make more than notaries, dentists, accountants and other professionals. Nurses are still at the bottom of all income groups at $2,342, which is less than pensioners at $3,097; farmers at $4,006; and fishermen at $928.

HOWEVER——

—Canadian stock brokers are emphasizing that the price-earnings ratio for the Canadian index stocks is 13.8 to one, compared to 18.1 for the D-J stocks, and that the shares of companies used in compiling the TSE industrial give an average rate of 4.8% compared to approximately 3.5% for stocks used in the D-J industrial average.

MR—A REALISM

Speaking to the representatives from 22 nations at the Moral Re-Armament world assembly at Mackinac Island, Chesley W. Carter, of Newfoundland, a member of the Canadian Parliament, said that Canada and the United States can not exist without each other: "We are each other's best customers and we can not survive an attack without each other—Canada depends on the military might of the United States and the U.S. depends on the DEW line in Canada.

Wolverine Shoe Votes Dividend

Directors of Wolverine Shoe and Tanning Corporation, Rockford, Mich., have declared a third-quarter dividend of 12½ cents per share, payable Nov. 1 to stockholders of record on Oct. 11.

This brings total dividends for the first nine months of 1960 to 37½ cents per share, an increase of 25 per cent. Shipments to Sept. 9, 1960, totaled $12,977,612, or approximately 23 per cent over the $10,534,221 for the similar period in 1959. Net earnings for this period were $488,129 as compared with $429,017 for the same months of 1959.

The 75-year-old company manufactures workshoes, boots and leather gloves, as well as pigsking casual shoes called "Hush Puppies."

REPRINTS AVAILABLE

Order *now* before type is discarded. State quantity wanted (100 or more), article title, magazine issue, and page number. Then you'll receive an *exact* price, as it varies with different articles. *Approximate* prices for one-page, magazine-size black and white reprints: 100 copies, $11.50; 500 copies, $13.50; 1,000 copies, $18.50; 5,000 copies $56.00. Write to:

MICHIGAN MANUFACTURER
and
FINANCIAL RECORD
8543 Puritan Detroit 38, Michigan

NEW CORPORATIONS

(With manufacturing concerns in bold face)

Ano-Kal Co., 2138 Frederick Ave., Kalamazoo; general manufacturing & merchandising; Albert E. Maass ---------- $ 50,000

Bay Fixture Co., 1755 Midland Road, Bay City; manufacture fixtures; Gustav Mueller ---------- $ 50,000

Bryant Engineering Company, 1504 Tenth Ave., Port Huron; general manufacturing; James G. Bryant ---------- $150,000

Grapo Agency, Inc., 108 East Broadway, Mt. Pleasant; insurance agency; Roy Leonard ---------- $200,000

Glendale Electronic Supply Co., 12530 Hamilton, Highland Park; deal wholesale in electronic products; Robert A. Dishell ---------- $150,000

Kanzol Enterprises, Inc., 302 Carleton St., Marysville; manufacture, & sell various products; Charles Loznak ---------- $ 50,000

Keri Plastic Company, 8067 South Telegraph, Taylor; general development research & manufacturing business; Gustave M. Mondrush, Jr. ---------- $50,000

Algonac Boat Products, Inc., 329 Columbia St., Algonac; manufacture & deal in boats; Wilbert A. Warner ---------- $ 50,000

Anderson Hilton Industries, Inc., 19534 Garfield, Detroit; general manufacturing; Arthur Hilton ---------- $ 1,000

Complex Assemblies, Inc., 2231 West Warren, Dearborn; manufacture stampings; Albert Fedell ---------- $ 6,000

John Lockwood and Associates, Inc., 133 Ransom, NE, Grand Rapids; manufacture machines; John O. Lockwood ---------- $ 50,000

Miracini and Sons, Inc., 1409 North Stephenson Ave., Iron Mountain; manufacture furniture, cabinets; Roy Maracini ---- $ 40,000

R & A Tool and Engineering Co., 24619 West Warren, Dearborn; manufacture tools, dies, fixtures; Paul E. Raymond ---------- $ 50,000

Bambi Bread, Inc., 2429 Cadillac Tower, Detroit; manufacture baked goods for wholesale trade; Peter Cavataio ---------- $ 50,000

Creative Enterprises, Incorporated, 233 East Forest, Detroit; manufacture lithographic plates; William B. Brakeville ---------- $ 50,000

Kar Glove & Apron Co., 22234 Fenkell Ave., Detroit; manufacture gloves, aprons; Morris Kar ---------- $ 2,000

Lakeway Chemicals, Inc., Moulton Ave., North Muskegon; manufacture chemicals & chemical supplies etc.; Normand Pfaneuf ---------- $ 50,000

Pro-Vita Laboratories, Inc., 13001 Joy Rd., Detroit; manufacture food supplement; Nicholas Salowich ---------- $ 50,000

Grand Rapids Commercial Heat Treating Company, 3832 Buchanan Ave., SW, Grand Rapids; any commercial, industrial manufacturing, merchandising or financial enterprise; Thomas H. Smith ---------- $ 50,000

Rett Electronics, Inc., 1881 First National Bldg., Detroit; manufacture electrical hydraulic & mechanical equipment; Philip T. Van Zile, II ---------- $200,000

Santa's Jiffy Tree Stand, Inc., 731 East Kalamazoo, Lansing; manufacture Christmas tree stands; William H. Proctor ------ $ 50,000

T & G Products and Sales, Inc., 10432 West McNichols, Detroit; manufacture automotive parts; Rachel Mathiak ---------- $ 50,000

Industrial Printed Parts Corporation, 510 Community National Bank Bldg., Pontiac; manufacture metals & other materials; Harry D. Wise, Jr. ---------- $ 50,000

Superior Wood Products, Inc., Box 125, Grand Marais; manufacture & produce timber, wood; Harry E. Habbershaw ---------- $ 60,000

Hugh E. Woodward Company, 99 East Baltimore, Detroit; general manufacturing & merchandising; William B. Hoey, Sr. ---------- $100,000

John G. Apfel Construction Company, 112 South Divison. (PO Box 1)., Bellaire; general contracting & construction; John G. Apfel ---------- $150,000

Ottawa Feed and Supply Company, 55 North Church St., Zeeland; manufacture poultry feeds & related merchandise; John A. Van Den Bosch ---------- $ 75,000

Tru Machining & Fabrication Co., 950 East Lincoln St., Madison Heights; any commercial manufacturing or industrial enterprise; Howard Guldi ---------- $ 50,000

Fairfield Plaza, Inc., 56 Maple Lane, Coldwater; real estate; Gladys H. Kerr ---- $150,000

R & L Steel Products, Inc., Northland Center, Southfield; manufacture steel products; Paul W. Harty ---------- $ 50,000

Frank's Finest Soap and Cleaning Powder Company, Inc., 4751 Rohns, Detroit; general manufacturing; Frank Gadomske ---- $ 50,000

Ann Moore Couturiere, Incorporated, 2930 Hogarth St., Detroit; manufacture & create garments; Ann Jewell Moore ---------- $ 50,000

Bond Stores Regional, Inc., % The Corporation Company, Dime Bldg., Detroit; manufacture wearing apparel; The Corporation Company ---------- 100 shares N.P.V.

Joyal Engineering Inc., 30776 John R., Madison Heights; manufacturing, industrial processing & all types of templates & dies; Walter C. Joyal ---------- $ 50,000

The Thermo-Shade Co., 1377 East 8-Mile Road, Ferndale; manufacture sealed insulated sun screen glass products; Joseph E. Fetzer ---------- 500 shares N.P.V.

Universal Products Incorporated, 8532 East Michigan, Parma; manufacture tools; Nelson B. Beaman ---------- $ 50,000

A-Square Corporation, 104 West Fourth St., Royal Oak; manufacture home appliances; Richard E. Hague ---------- $ 50,000

Plas-Tainer Inc., 7025 Maple Rd., Saline; general manufacturing; Clarence A. Price ---------- $100,000

Jane Nell, Incorporated, 1311 South Westnedge, Kalamazoo; manufacture clothing; Jane Graham Milham ---------- $ 50,000

Wm. Scott Machinery Co., Inc., 4326 Berkshire, Detroit; manufacture industrial machinery; Wm. F. Scott ---------- $ 50,000

Tee-Bar Distributing Company, 18072 Pennington, Detroit; manufacture automotive & vehicle parts; Thelma M. Bragman -- $ 5,000

Truan's Candies, Inc., 13716 Tireman, Detroit; deal in real & personal property; Mark C. Truan ---------- $150,000

Acom Welding and Boiler Company, 7736 West Fort St., Detroit; manufacture welding & boiler equipment; John T. Blackburn ---------- $ 50,000

Berkley Sand and Soil Contractors, Inc., 3572 West 12-Mile Road, Berkley; deal in real estate & manufacture raw construction materials; Jakob Gerescher ---------- $ 50,000

Chain Lakes Research Associates, Inc., 20305 Brentwood, Livonia; manufacture electronic equipment; Howard F. Lynn ---------- $ 50,000

Dairy Dan, Inc., 35705 Ford Rd., Wayne; manufacture dairy products; George W. Freppon ---------- $ 50,000

Howard Signs, Inc., 2521 Elizabeth Lake Rd., Pontiac; manufacture signs; Howard L. Husted ---------- $ 50,000

Peabody Instrument Co., 820 Ford Bldg., Detroit; manufacture industrial tools, instruments; Frank W. Donovan ---------- $ 50,000

A.J.R.B. Electronic Service Corporation, 2104 Myrtle, Detroit; manufacture & deal in TV, radio; Gladys Black ---------- $ 50,000

Branch Sausage Company, 3063 Penobscot Bldg., Detroit; sausage, cold meats & delicatessen products; Stanley Gelfund ---- $ 50,000

J and D Manufacturing Co., 8436 Freeland, Byron Center; manufacture wood, metal & synthetic products; Guy Harold Dypert ---------- $ 50,000

Tool craft, Inc., 1275 East Cross St., Ypsilanti; general manufacturing and merchandising; Domonic Palazzolo ---------- $ 25,000

Urethane Foam Incorporated, 627 Howard, Detroit; general manufacturing; Bernard Alzner ---------- $ 50,000

Doors Incorporated, 21041 Schoenherr Rd., East Detroit; manufacture and sale of doors; Warren Loranger ---------- $ 1,000

Metrolform Corporation, 2766 Penobscot Bldg., Detroit; manufacture, roll form construction materials & metal shapes; Helen K. Mathieson ---------- $ 50,000

(Continued on Page 116)

Bids Sought For New Branch Postal Station

Bids will be sought by the Post Office Department for construction of a new Grand River Station to replace the one used for 45 years at 15th Street and West Forest, it is revealed by Edward L. Baker, Detroit Postmaster. The new structure will be erected at 17th and Hancock streets.

Baker said the building will be leased by the government from private interests. It will contain 7,600 square feet of floor space, loading platforms, and a parking area.

Statement required by the act of August 24, 1912, as amended by the acts of March 3, 1933, July 2, 1946 and June 11, 1960 (74 stat. 208) showing the ownership, management and circulation

Of Michigan Manufacturer & Financial Record published monthly at Detroit 38, Michigan for October 11, 1960.

1. The names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Manufacturer Publishing company, 8543 Puritan Ave., Detroit, Michigan; Editor, Edward E. Hayes, 8543 Puritan Ave., Detroit, Michigan; Business Manager, J. M. Pickell, 8543 Puritan Ave., Detroit, Michigan.

2. The owner is: (If owned by a corporation its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm its name and address, as well as that of each individual member must be given.) Manufacturer Publishing Company, 8543 Puritan Ave., Detroit, Michigan. J. M. Pickell, 8543 Puritan Ave., Detroit 38, Michigan; J. M. Pickell, Jr., 8543 Puritan Ave., Detroit 38, Michigan; M. R. Pickell, 8543 Puritan Ave., Detroit 38, Michigan.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages or other securities: (If there are none, so state.) None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear on the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above was 10,263. (This information is required by the act of June 11, 1960 to be included in all statements regardless of frequency of the issue.)

J. M. Pickell
(Signature of Business Manager)

Sworn to and subscribed before me on this 11th day of October, 1960.

Mel M. Werden
Notary Public, Wayne County, Michigan
(My commission expires August 13, 1961)
(Seal)

SALE OR LEASE

INDUSTRIAL BUILDINGS & LAND

Metropolitan Detroit Area

BUILDINGS: 1,000 to 1,116,000 Sq. Ft.

LAND: 1 lot to several acres

OUR MASTER BROCHURE ON REQUEST

SELDON CO., REALTORS

300 Penobscot Bldg. Detroit 26, Michigan

WOodward 1-7800

New Michigan Corporations

(Continued from Page 115)

M and A Development Corporation, 26269 Groesbeck Highway, Warren; general manufacturing; Alice Marie Dryden ____$ 50,000

Cadillac Iron & Metal Co., Inc., 700 West Western Ave., Muskegon; manufacture steel & other metals; Pauline Wiener ____$ 50,000

Frosty Corporation, 2550 Guardian Bldg., Detroit; manufacture coin operated food dispensing machines; Max E. Klayman ___$10,000

Michigan Manufacturing Company, Stephenson and Fifth Sts., Iron Mountain; manufacture wood products, lamps, card tables and juvenile furniture; George Wallner ____$50,000

Industrial Process and Manufacturing Co., 28773 Everett, Southfield; manufacture tools, dies, and allied equipment; Clifford M. Heller ____$25,000

Jess Corporation, 15770 Telegraph Road, Detroit; manufacture commercial & industrial magnetic devices; Dale E. Jess____$50,000

Reeds Shoes of Michigan, Inc., 113000 East 8-Mile Road, Detroit; manufacture & sell footwear; Harry Hoffenbloom____$50,000

Triclar Land Company, 1400 Buhl Bldg., Detroit; deal in real and personal property; Pierre V. Heftler____$400,000

E-Z-Troll, Inc., 47204 Lauren Court, Belleville; manufacture fishing equipment; Charles R. Herington____$10,000

Robert Hall Clothes of Waterford, Inc., % The Corporation Company, Dime Bldg., Detroit; manufacture wearing apparel; The Corporation Company____$50,000

Robert Hall Clothes of Livonia, Inc., % The Corporation Company, Dime Bldg., Detroit; manufacture wearing apparel; The Corporation Company ____$50,000

Powers-Detroit Corporation, 318 East Oakridge Ave., Ferndale; manufacture special & standard machines; James K. Kershner_$25,000

Royco, Inc., 2751 East Jefferson, Detroit; advertising & sales promotion; Thomas G. McCormick ____$300,000

W. A. Brown Corporation, 9300 Hubbell Ave., Detroit; manufacture heating & air conditioning equipment; Bernard F. Zinn____$50,000

Detroit Packaging Corporation, 22936 Brookdale Ave., St. Clair Shores: manufacture paper cartons & packing materials; Michael A Ruthenberg ____$50,000

Malloy Lithographing, Inc., 5411 Jackson Rd. Ann Arbor; manufacture by offset printing of books; James H. Malloy____$100,000

Thomas Page Co., 5926 Chalmers, Detroit; manufacture perfumed matches & other incense products; Thomas Page____$50,000

Capital Manufacturing and Distributing Company, Inc., 4207 Auburn Drive, Royal Oak; Raymond C. Touhey; manufacture advertising displays ____$50,000

Michigan Re-Packing and Produce Company, 1525 Adelaide, Detroit; deal in fruits, vegetables; Sam Ortisi____$150,000

T & B Tube Cut-Off Machine Co., 4111 Mitchell Dr., Flint; manufacture tube cutting equipment; Richard E. Tuttle____$50,000

Universal Builders, Inc., 931 Detroit St., Flint; manufacture building materials; Jacob Lazar ____$50,000

C. M. Voy Sales Corporation, 15918 James Couzens Hwy., Detroit; general manufacturing & merchandising; P. Q. Bernhardt__$50,000

Watson Steel Products Company, 2953 Boynton, NE, Ada; manufacture laundry & dry cleaning equipment & machinery; Henry Watson ____$1,000

Bichler & Son, Inc., 1250 Alpine Ave., NW, Grand Rapids; deal in merchandise for control of insects & pests; Joseph Bichler____$200,000

Kraftube Fabricators Inc., 23444 Schoenherr Road., Warren; general manufacturing; Belmont R. Smith____$200,000

Research Fabrication Engineers, Inc., 10049 Textile Road, Ypsilanti; manufacture machines, tools; Gerald L. Post ____$50,000

White Lake Foundry Company, 8722 Water St., Montague; manufacture gray iron & metal castings; Gerald Garvelink____$50,000

D & C Plumbing & Heating Supply Co., 5235 Jackson Rd., Ann Arbor; manufacture plumbing & heating supplies; Donald F. Damon ____$50,000

Kalendex Corporation, 111 East 10 - Mile Road, Madison Heights; manufacture rubber, resin, fibre, plastic & allied products, John Kohl ____$50,000

RESEARCH
DEVELOPMENT
QUALITY CONTROL

DTL

554 BAGLEY
PHONE WO 1-4870
DETROIT 26, MICH.

THE DETROIT TESTING LABORATORY, INC.

New $720,000 Detroit Freight Terminal

Operations started in Detroit recently at this new $720,000 motor carrier terminal of Great Lakes Express, of Saginaw, which is located on a 14-acre site at Dequindre and Six-Mile road. It provides more than 29,000 square feet of dock and warehouse area.

Campbell Engineering, Inc., of Detroit, designed the building, and it was erected by the H. F. Campbell Construction Co., Detroit general contractors.

Great Lakes Express, of Saginaw, has started operations in its new $720,000 motor carrier terminal in Detroit. Located at Dequindre and Six-Mile road, the new facility boasts a unique dock, designed for speedy handling of freight cargoes. It is 360 feet long by 80 feet wide, and is capable of accommodating 60 trucks and trailers at one time.

A floor-type conveyor moves freight to all parts of the dock, and automatic dock-levelers have been installed at each of the 60 bay doors. Many portions of the dock and warehouse area are equipped with gas-operated infrared heat units in the ceiling, which will keep freight at a 65-degree temperature without heating the air.

An air-conditioned office building, which joins the dock on the east side, provides luncheon facilities, a lounge, and a locker room for drivers and dock personnel.

The city dispatch office includes radio equipment for constant two-way communication with Great Lakes trucks in the Detroit area, and a private telephone system connects the Detroit terminal with other Midwest terminals in the Great Lakes Express System.

A second building on the site is a garage and fleet maintenance building.

Great Lakes employs over 900 with more than 200 working in Detroit, and serves more Michigan communities than any other carrier.

James N. Priest Co., 18450 Livernois Ave., Detroit; manufacture construction materials; James N. Priest ____$10,000

Serta Mattress Company, 2760 West Warren, Detroit; manufacture mattresses, box springs, furniture; Harry Kraft ____$25,000

Serta Restokraft Mattress Company, 2760 West Warren, Detroit; manufacture mattresses, box springs, furniture; Harry Kraft____$25,000

Allied Glass & Metal Corporation, 7121 Schaefer Road, Dearborn; deal in & install glass & glass products; Merle F. Myers_$300,000

American Swiss Tool & Mfg. Co., 8620 Lyndon Ave., Detroit; manufacture tools & equipment; Roger G. Crete____$50,000

Pre-Fit Door, Inc., 3202 Miller Road Flint; general manufacturing; Hubert A. Herman ____$50,000

The Sea-Tel Corporation, 18645 West 7-Mile Road, Detroit; deal in marine products and real estate; Robert L. Brooks____$150,000

B & D Catering, Inc., 578 Stocking Ave., NW, Grand Rapids; manufacture vending equipment; Dean E. Ziegler____$50,000

C. Jerome Company, Inc., G-3437 South Saginaw St., Flint; manufacture & deal in building materials, Jerome Cohen____$1,000

Ken Rose Food Products, Inc., 410 Morrison, Bangor; manufacture & sell food products; Kenneth Matthies ____$75,000

Royal Cut Stone Company, 11870 Middlebelt Rd., Livonia; manufacture building materials; Alfred A. Johnson____$6,500

Tool Specialties Company, 3890 West 11-Mile Road, Berkley; manufacture tools, special tools; Robert J. Wolfe____$50,000

Tru-A Manufacturing Company, Inc., 1930 Marston Ave., Detroit; general manufacturing; William J. Davis____$50,000

Perfect Mold Co., Inc., 730 South Main St., Royal Oak; manufacture & sell specialty items; Leonard Becker ____$50,000

H. V. Young Oil Company, Inc., Gladwin; manufacture & deal in trailers, oil & gas products; Kenneth Young__1,500 shares N.P.V.

Okemos Supply Co., 2128 East Grand River, Okemos; heating & plumbing business; William C. Gieszer____$200,000

West-Higgins Enterprises, Incorporated, 67 East Forest Ave., Detroit; manufacture & sale of phonograph records, wholesale & retail; Robert West ____$250,000

Charles J. Long, Inc., 400 Michigan Trust Bldg., Grand Rapids; any commercial, industrial manufacturing or merchandising enterprise; Charles J. Long____$100,000

Colorscreen Process Printing Co., 23710 McCall, Southfield; manufacture & sell display & advertising signs; Paul Mallett____$25,000

Factri-Bilt Wood Products, Inc., 650 East 9-Mile Road, Ferndale; general manufacturing Melvin W. Moss____$50,000

David E. May, Inc., 35084 Haupert, Warren; general manufacturing; David E. May__$50,000

Roblo Variety, Inc., 210 East Michigan St., Paw Paw; general manufacturing Robert G. Love ____$50,000

Anderson Associates, Incorporated, 11539 Chalmers Ave., Detroit; manufacture & deal in metals; Mark P. Roberts____$30,000

Contact Lens Industries of America, Inc., 5707 West Road, Washington; manufacture optical goods; Joseph Sapienza____$50,000

Gard Enterprises, Inc., 2156 Penobscot Bldg., Detroit; manufacture food & food products; Frank H. Boos____$50,000

O. Keller Tool Engineering Company, 12727 Stout St., Detroit; design & manufacture dies and tools; Orville C. Keller____$25,000

Motor City Diecutting Corporation, 744 Savannah, Detroit; manufacture steel rule cutting dies; Stephen Coslett____$50,000

Professional Products, Inc., 509 Fox Bldg., 2211 Woodward, Detroit; manufacture & deal in personal property; Lawrence Weisberg____$50,000

Raven Industries, Inc., 1435 Houston-Whittier, Detroit; manufacture industrial dies, molds, tools; Joseph Ruhana____$50,000

Reed City Tool & Die Corporation, 603 East Church St., (PO Box 148), Reed City; manufacture tools & dies; Francis C. Werth ____$50,000

Tremayne & Scott, Inc., 117 East First St., Flint; general department store; Henry W. Tremayne ____$150,000

Chem—Pharm International Incorporated, 10622 Morang, Detroit; deal in patents, manufacture patented articles; Ralph T. Kirchner. ____$150,000

USED—FOR SALE

CRANE—5 ton overhead with track, American Monorail, excellent condition.

BOILERS—Three—40 horsepower automatic gas fired, 1,800,000 B.T.U. each.

Box 2732

Michigan Manufacturer & Financial Record

Biscayne 4-Door Sedan. All new Biscaynes (6 or V8) give you a full measure of Chevrolet quality, roominess and proved performance—and yet they're priced right down with many cars that give you a whole lot less!

THE GREATEST SHOW ON WORTH

measurably new, immeasurably nice

NEW!!! 1961 CHEVROLET

There's less out size in the new '61, giving you extra inches of clearance for parking and garaging. But more in size with seats as much as 14% higher and a shaved down driveshaft tunnel that leaves wide open space for feet. Larger door openings (up to 6 inches wider) make an open and shut case for comfort and convenience all by themselves, and that deep-well trunk shows you Chevy thinks big about baggage, too. Loading is an easy lift to the new bumper-level deck lid opening, and you can stack baggage 15% higher, thanks to the new recessed floor design. Here's the '61 car that's luxurious where you want luxury, and practical where you want thrifty, no-nonsense practicality. It's at your Chevrolet dealer's right now, the car that gives you a whole new measure of your money's worth!

CHEVROLET

Chevrolet Division of General Motors, Detroit 2, Michigan

Impala Sport Coupe. One of five luxury-loving Impalas in Chevrolet's 20-model lineup for '61!

SEE JOHN WAYNE IN "THE SPIRIT OF THE ALAMO" NOV. 14, ABC-TV

THE BONNEVILLE SPORTS COUPE FOR 1961

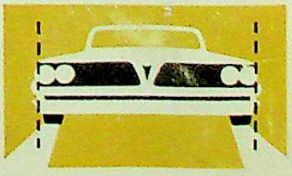
The well-ordered Pontiac for '61 trims width outside the wheels for better balance

Balance is the big factor in pleasant, comfortable travel!

It's achieved by distributing as much weight as possible directly between the wheels. Pontiac '61 has more of its weight between the wheels than any other car. You have the feeling of sitting erect even when swinging around curves and corners.

If you travel a lot, or just want to enjoy your travel a lot more, try new Wide-Track at any of our fine Pontiac dealers.

PONTIAC MOTOR DIVISION • GENERAL MOTORS CORPORATION



THE ONLY WIDE-TRACK CAR

PONTIAC '61—It's all Pontiac! on a new Wide-Track!